Document #574 Comment #1 Commentor: U.S. Environmental Protection Agency

EPA's environmental ratings: Because DOE has not selected a preferred alternative, EPA rated the potential environmental impacts and sufficiency of the information regarding the four action alternatives analyzed in the Draft EIS.

On-site Alternative	Klondike Flats Alternative Site	Crescent Junction Alternative Site	White Mesa Mill Alternative Site	No Action Alternative
EU-2	EC-2	EC-2	EO-2	not rated

Response:

DOE has considered the analyses provided in the EIS, the consequences of the uncertainties characterized in the EIS, and the comments received on the draft EIS. Based on these considerations, in the final EIS DOE identifies off-site disposal at the Crescent Junction site using rail transportation and active ground water remediation as its preferred alternatives for the remediation of the Moab mill tailings, vicinity properties, and contaminated ground water. Further discussion of the basis for DOE's identification of these preferred alternatives is provided in Section 1.4. In addition, further discussion of EPA's ratings and the sufficiency of the information contained in the EIS is provided in subsequent comments and responses. DOE believes that the final NRC disposal cell design that would be developed in the post-Record of Decision remedial action plan would resolve EPA's concerns that resulted in the EC-2 rating for the Crescent Junction disposal alternative, should that location be selected in the Record of Decision.

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Document #574 Comment #2 Commentor: U.S. Environmental Protection Agency

EU (Environmentally Unsatisfactory) The basis for our Environmental Unsatisfactory rating for the On-site Alternative is the potential for prolonged environmental and public health risk that could result from the continued release of toxic contaminants to ground and surface waters because of potential failure of the proposed remedy. The on-site remedy does not include a liner beneath the disposal pile, thus allowing river flooding to continually reintroduce contaminants in to the river. Under such circumstances, the on-site remedy would not satisfy the requirements of 40 CFR 192 and the groundwater protection mandates of the State of Utah. In addition, the river could migrate towards the pile, and the salt-bed underlying the pile could dissolve, over the life of the remedy. Such natural actions would greatly compromise the integrity of the remedy.

Response:

The EIS acknowledges that episodic flooding would periodically introduce contaminants into the river (Section 4.1.3). The on-site alternative does not include installing a liner beneath the disposal pile. Nonetheless, the Department's evaluation indicates, and Section 4.1.3 has been revised to clarify, that during and after the estimated 80-year active remediation effort, even during episodic flood events, water quality would remain protective of aquatic organisms at the point of exposure. Therefore, the on-site remedy could satisfy the requirements of 40 CFR 192. The potential for the Colorado River to migrate is discussed in Section 4.1.17 and Section 2.6. Consequently, for the on-site alternative, the EIS incorporates engineered barriers in the form of tailings cover, side slope riprap, and a buried riprap barrier wall to enhance pile stability and reduce the already low probability of catastrophic failure of the dispoal cell should river migration begin to occur unexpectedly. The issue of salt bed dissolution and basin settlement is discussed in Section 4.1.1, which acknowledges that the subsidence would result in the tailings coming into permanent contact with the ground water after several thousand years.

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Document #574 Comment #3 Commentor: U.S. Environmental Protection Agency

EO (Environmental Objections) The basis for our environmental objection for the White Mesa Mill site is that DOE's conceptual plan for tailings disposal will likely be inconsistent with Utah's ground water protection standards. This concern could be corrected by project modifications.

Response:

The design considered in the EIS (Section 2.2.5) presents a reasonable configuration and conceptual design for analytical purposes against which impacts among the alternatives may be assessed. The details regarding final design of this alternative, should it be selected, would be determined through negotiations between the licensee (IUC) and the State of Utah, which is the regulatory authority under Title II of UMTRCA), as an Agreement State. The final design would meet all applicable requirements, including the criteria set forth in 40 CFR 192, and would be protective of public health and safety and the environment.

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Document #574 Comment #4 Commentor: U.S. Environmental Protection Agency

EC (Environmental Concerns) EPA has identified environmental impacts that should be avoided for the Klondike Flats Site and the Crescent Junction Site in order to fully protect the environment. Corrective measures may require additional mitigation measures that can reduce the environmental impact.

Response:

In other comments, EPA expressed specific concerns that DOE considers to be the basis for the EC-2 rating (Environmental Concerns – Insufficient Information) for the Klondike Flats and Crescent Junction disposal alternatives. As described in the EIS, DOE would mitigate these and other potential concerns in implementing either alternative. For example, EPA expressed concerns about dewatering the tailings for slurry transport, increased cover infiltration due to cracking, and ephemeral streams at Crescent Junction. Processing the tailings for off-site disposal using slurry transportation is discussed in Section 2.2.4.3. The process would use vacuum filtration to produce filter cake with a 15- to 20-percent moisture content, which is suitable for placement in the disposal cell without concern for transient drainage or substantial differential settlement that could compromise cover integrity. Construction specifications regarding moisture contents and appropriate construction management QA oversight would ensure appropriate placement of tailings should the vacuum filtration prove problematic. In the EIS, DOE proposes, conceptually, a moisture storage with capillary break, vegetated repository cover for the on-site alternative, the Crescent Junction alternative, and the Klondike Flats alternative. However, due to the high degree of geologic isolation afforded by the Crescent Junction and Klondike Flats sites, the cover performance requirements for these two alternatives may be less stringent than for the on-site alternative. DOE intends to examine a range of detailed cover designs, including moisture storage covers, for the preferred alternative. The cover design will be addressed in detail in the post-Record of Decision remedial action plan.

The EIS acknowledges that the Crescent Junction site has ephemeral streams that are ungauged and that the impacts of extreme flooding are unknown (Section 3.3.6). However, locating the disposal cell away from ephemeral drainages and implementing drainage control structures(identified in Figure 2−16) and other surface drainage control measures would mitigate this potential impact and environmental concern.

In discussions with the EPA regarding EPA's ratings for the Klondike Flats and Crescent Junction alternatives, DOE clarified that the level of detail regarding cover design and performance that formed the principal basis of EPA's EC-2 ratings are not addressed under UMTRCA until after the Record of Decision in the remedial action plan, and that the fundamental cover design elements mentioned in its comments are in fact included in the conceptual design used in the EIS. With this explanation, EPA informally agreed that its rating for Klondike Flats and Crescent Junction should perhaps have been Lack of Objection (LO).
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Document #574 Comment #5 Commentor: U.S. Environmental Protection Agency

Category 2 (Insufficient Information) EPA finds that the draft EIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment. The identified additional information, data, analyses, or discussion should be included in the Final EIS.

On-site Alternative: The Moab site lies adjacent to the Colorado River, the principal surface water resource for the area, which has been classified by the State of Utah as protected for warm-water game fish and other aquatic life. The River continues to be adversely affected by site-related contamination, mostly because of groundwater discharge. Contaminants from the tailings pile include uranium and ammonia, which during low river flow conditions exceed water quality standards. For example, ammonia concentrations in the River in the vicinity of the tailings pile exceed 300 mg/L, resulting in conditions that are, at times, toxic to native and endangered fish. The on-site remedy would result in continuing exceedances of water quality criteria over the long term. Indeed, the DOE estimates that after remediation and ground water clean-up, ammonia will remain in toxic concentrations to aquatic life for 80 years.

Response:

The commentor has accurately summarized certain key aspects of current conditions at the Moab site as described in the EIS. Results of DOE's contaminant transport and ground water flow computer modeling indicate it would take approximately 75 years for the ground water to passively clean itself to levels that would be protective of aquatic organisms in the adjacent surface waters if the pile were relocated. If the pile were stabilized in place, it would take 5 years longer (or approximately 80 years) to reach the same level of protection. However, DOE disagrees with the commentor's interpretation that the on-site remedy would "result in continuing exceedances of water quality criteria over the long term." As described in Section 2.3 of the EIS, the Department would perform an active ground water remedial action to maintain protective levels in the river during the 75- to 80-year period required for the aquifer to passively clean itself. Once implemented (within 5 to 10 years of the Record of Decision), this remedial action would intercept contaminated ground water, prevent its reaching the river, and thereby maintain protective surface water quality in the river. In Table 2−33 (item #1), the EIS acknowledges the assumptions and uncertainties of the ground water and site conceptual models and articulates the potential consequences of those uncertainties, including the possibility that the target goal of 3 mg/L ammonia in ground water might never be met and that ground water remediation would be required indefinitely beyond the projected 75- to 80year ground water remediation periods for off-site and on-site disposal, respectively. The impacts to aquatic organisms from both on-site and off-site disposal are discussed in Chapter 4.0 of the EIS and in the Biological Assessment (Appendix A1 of the EIS). The USF&WS Biological Opinion (Appendix A3 of the EIS), which was not available for the draft EIS, concurs with DOE's determinations for threatened and endangered species as set forth in the Biological Assessment. On the basis of DOE's preferred alternatives (relocation of tailings to Crescent Junction by rail and ground water remediation at the Moab site), the USF&WS would allow a take of endangered fish for up to 10 years. As conditions of the take provision, the USF&WS is requiring DOE to comply with Reasonable and Prudent Measures and Conservation Measures to ensure that DOE is minimizing the potential take of endangered fish. These measures, which include a water quality monitoring plan, are detailed in the Biological Opinion.

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Document #574 Comment #6 Commentor: U.S. Environmental Protection Agency

Presently, river flooding periodically saturates the toe of the pile and continually reintroduces contaminants into the ground water and the river. Moreover, although the draft EIS presents information that supports the notion that river migration may be away from the pile to the south and east, DOE also accepts that the direction of river migration remains uncertain in the long term. Consequently, it is very unlikely that the proposed on-site remedy will be able to provide sufficient long-term pile stability due to the potential for the Colorado River to migrate north and west towards the pile.

Response:

The EIS acknowledges the potential for episodic flooding of the tailings pile if it were capped in place and quantifies the impacts that could result from such inundation (Section 4.1.3). These impacts include additional leaching of contaminants into the ground water and subsequent migration to the river. As stated in the EIS, an on-site disposal cell would include side slopes armored with riprap (Section 2.1.3.1) of sufficient size to resist erosion from floodwaters. The design would also include a barrier wall (Section 2.1.4) between the river and the capped pile to mitigate against river encroachment. It is DOE's opinion that these measures would make the probability of a catastrophic failure of an on-site disposal cell very low. Recent USGS data on potential flood velocities that might occur at the pile would be utilized for the final design of the riprap side slopes and the barrier wall if the on-site disposal alternative were selected.

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Document #574 Comment #7 Commentor: U.S. Environmental Protection Agency

Additionally, the eventual dissolution of the salt-beds underlying the disposal site will result in prolonged saturation of the toe of the pile. Moreover, the dissolution of the salt-beds will result in subsidence in the vicinity of the disposal site, which will compromise the integrity of the cap, which would lead to radon release and increased rate of water infiltration through the pile.

Response:

The Department agrees with the EPA that at some point far in the future, dissolution of the underlying salt beds will result in prolonged saturation of the toe of the pile as described in the EIS (Sections 3.1.1.4 and 4.1.1) if the pile were not relocated. The regulatory time period for the design of the cell is at least 200 years but not to exceed 1,000 years (40 CFR 192). Under the analytical assumptions in the EIS, dissolution of the salt beds and subsidence in the vicinity of the disposal site is on a geologic time frame that is well beyond the regulatory design period.

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Document #574 Comment #8 Commentor: U.S. Environmental Protection Agency

Based on the above, the on-site alternative, in the long-term will not be able to satisfy the requirements of 40 CFR 192 or the State of Utah's groundwater protection requirements. Consequently, EPA strongly recommends that this alternative be eliminated from consideration because it cannot meet the established purpose and need for the project.

Response:

DOE acknowledges that uncertainties necessarily surround its assumptions regarding the cover performance, ground water modeling, and several other factors discussed in Section 2.6.3. However, despite these uncertainties, DOE believes the on-site disposal alternative is nonetheless a reasonable alternative and, therefore, must be considered in the EIS pursuant to NEPA. In addition, DOE's position is that including the on-site alternative in the EIS is necessary in order to present all the environmental information required to support sound decision-making. In making its final decision, DOE will consider EPA's views regarding the on-site alternative. Also see response to comment #1.

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Document #574 Comment #9 Commentor: U.S. Environmental Protection Agency

Klondike Flats Site: This remedy would require relocating the Moab tailings 18 miles north to land managed by the Bureau of Land Management (BLM). Klondike Flats is remote and there are no perennial streams or other surface water features in or near this area; therefore, there are no significant aquatic ecological resources or wetlands that would be affected. Truck or rail transport to this site would not require the transport of tailings through a community. The Klondike Flats location has suitable depth to groundwater protected by the impermeable Mancos Shale. Constructing the optional slurry line to transport the Moab tailings would reduce the highway safety concerns, but does not eliminate them, because a substantial portion of the tailings may prove to be unsuitable for slurry transport. This could require significantly more truck transport for the slurry line not considered by DOE. Transport by slurry requires dewatering the material upon arrival at the site to achieve optimal moisture content. This is a concern because if dewatering fails to achieve optimal moisture, there is a risk of increasing leachate volumes and extending the transient leaching time through the disposal cell. It should be noted that rail transport has the lowest accident rate potential. The site has some environmental concerns due to conflicts with recreational vehicles and will require transporting cover material from another location on BLM lands. Because the conceptual cover as designed may result in rain water infiltration due to clay desiccation, selecting a cover design based on a soil-water balance will further reduce infiltration.

Response:

The comment accurately summarizes certain aspects of the Klondike Flats site as described in the EIS. The EIS acknowledges in Section 2.2.4 that some truck traffic would be necessary under the slurry line option because some debris and large material could not be processed for slurry transport. The potential for conflicts between recreational vehicle operators using the area near the Klondike Flats site and tailings truck traffic is acknowledged in the EIS (Section 4.2.8.2); this discussion has been expanded in the final EIS. In addition, the uncertainty and potential for significantly more truck transport for the slurry line alternative is discussed in Section 2.6.

The commentor's concerns regarding transport by slurry and associated dewatering of the material upon arrival at the site to achieve optimal moisture content are addressed in Section 2.2.4. Also see response to comment #4.

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Document #574 Comment #10 Commentor: U.S. Environmental Protection Agency

Crescent Junction Site: This remedy would relocate the Moab tailings 30 miles north to land managed by BLM. The site covers several square miles of desert terrain and no perennial streams are present. However, ephemeral streams may carry high flow during heavy rains. Because no perennial steams or other surface water bodies are present, aquatic ecological resources and wetlands would not be adversely affected by activities at this site. The Crescent Junction location has suitable depth to groundwater protected by the impermeable Mancos Shale. Truck transport and slurry transport have similar environmental concerns to those we identified for the Klondike site. Rail transport requires a longer haul than the Klondike site, but this does not increase cost significantly since the expense of rail haul is primarily associated with loading and unloading material. Rail transport to Crescent Junction can use the existing separate grade crossings. This site has an environmental advantage compared to other sites, because suitable cover material can be obtained at the proposed cell location resulting in less land disturbance. As noted above for the Klondike Flats site, DOE's proposed disposal cell cover may allow leachate movement; therefore EPA suggests selecting a cover design based on a soil-water balance that will further reduce infiltration.

Response:

The commentor's synopsis of the Crescent Junction site conditions and logistics is consistent with the information presented in the EIS. As noted in the response to comment #1, in the final EIS DOE identifies off-site disposal at the Crescent Junction site using rail transportation and active ground water remediation as its preferred alternatives for the remediation of the Moab mill tailings, vicinity properties, and contaminated ground water.

The response to the commentor's concerns regarding truck and slurry transport and cover design is identical to the response for comment #9, except to note that potential conflicts between recreational vehicles and tailings trucks would be much less likely under the Crescent Junction alternative due to its location. Also, see response to comment #4.

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Document #574 Comment #11 Commentor: U.S. Environmental Protection Agency

White Mesa Mill Site: This remedy would co-locate the Moab tailings 85 miles south to privately-owned lands at the uranium mill managed by the International Uranium (USA) Corporation (IUC). Other than the tailings disposal ponds, no perennial surface water is present at this site. Wetlands at the site are restricted to very small areas. In addition, there is also a concern with the adequacy of ground water protection from disposal of uranium mill wastes at this site. IUC is in the process of installing a double cell liner in order to meet Utah's Ground Water Protection Program requirements. Changes to the design of the proposed disposal cells are needed to adequately protect ground water in the Burro Canyon formation, which is the uppermost aquifer. DOE acknowledges that this could potentially contaminate surface springs within several thousand years. Such contaminantes could contain uranium, other radioactive constituents, and mill-sourced pollutants. This site may require significant improvements to the proposed waste cell design in order to assure compliance with the ground water protection requirements for the State of Utah.

Transportation concerns and long-term risks to ground water of this remedy, as proposed and designed, could be significant unless additional design measures are implemented. Truck transport along narrow US-191 presents a high risk of vehicular accidents and would significantly increase noise in the communities of Moab, Monticello, and Blanding. Slurry transport has similar environmental concerns to those we identified for the Klondike site and would also disrupt wetlands by crossing the Scott Matheson wetlands preserve and impact numerous Anasazi-culture or older archeological sites.

DOE also needs to consider that locating these tailings at the White Mesa Mill site adversely affects ten or more Native American traditional cultural properties. The Ute Mountain Ute Tribe, which represents the White Mesa community four miles south of the mill, does not support selection of the White Mesa Mill site, due in part, to the predicted impact to these traditional cultural properties.

Response:

The design considered in the EIS (Section 2.2.5) presents a reasonable configuration and conceptual design for analytical purposes against which impacts may be comparatively assessed. The details regarding final design of this alternative, should it be selected, would be determined through negotiations between the licensee (IUC) and the State of Utah, which is the regulatory authority under Title II of UMTRCA, as an Agreement State. The final design would meet all applicable criteria, including the criteria set forth in 40 CFR 192, and would be fully protective of public health and safety and the environment.

As the commentor points out, the EIS acknowledges that under the conceptual design, contaminants could potentially impact surface springs within several thousand years (Section 4.4.3), which is well beyond the requisite period of compliance (200 to 1,000 years).

The EIS acknowledges the noise and traffic impacts associated with the truck and slurry transportation modes in Sections 4.4.10 and 4.4.16, respectively. Although truck transportation risks are greater than rail risks, DOE does not agree that the risk of vehicular accidents would be "high." Nevertheless, DOE agrees that it would be prudent to minimize the potential risks for all

Document #574 Comment #11 - response continued

transportation options. Slurry transport impacts on wetlands are identified in Sections 4.4.5, and the impacts associated with cultural resources are addressed in Section 4.4.9.

DOE is sensitive to the concerns of the Ute Mountain Ute Tribe regarding potential impacts to traditional cultural properties. These concerns will be considered as input to DOE's final decision.

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Document #574 Comment #12 Commentor: U.S. Environmental Protection Agency

No Action Alternative: Under the No Action Alternative, no contaminated materials would be remediated or removed from the Moab site. EPA is not rating the No Action Alternative, because the Agency does not believe this is a feasible alternative considering the stated purpose and need and applicable environmental laws and regulations. If DOE identifies the No Action Alternative as a preferred alternative, EPA will fully analyze and rate the alternative at that time.

Response:

The No Action alternative provides a necessary baseline for comparing the impacts of the action alternatives. The EIS acknowledges that selection of the No Action alternative would be highly unlikely because it would entail cessation of management of the site in violation of the requirements of 40 CFR 192.

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Document #574 Comment #13 Commentor: U.S. Environmental Protection Agency

Thank you for the opportunity to review and comment on DOE's alternatives to remediate the Moab uranium mill tailings pile, one of a few remaining uranium mill tailings piles located within a river floodplain. In conclusion, we suggest DOE fully consider the benefits of either the Klondike Flats site or the Crescent Junction site using rail transport in order to provide a secure geologic setting that offers the best opportunity for long-term public health and environmental protection.

Response:

As noted in the response to comment #1, in the final EIS DOE identifies off-site disposal at the Crescent Junction site using rail transportation and active ground water remediation as its preferred alternatives for the remediation of the Moab mill tailings, vicinity properties, and contaminated ground water. DOE will consider EPA's suggestions in its final decision-making.

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Document #574 Comment #14 Commentor: U.S. Environmental Protection Agency

Based on the rating for the On-site Alternative, we may refer this matter to the President's Council on Environmental Quality unless a satisfactory agreement can be reached. We would like to formally consult with DOE regarding the two alternatives that EPA rated as "Environmentally Unsatisfactory" and "Environmental Objections." Please contact me at …… to begin our consultation process. Your staff may wish to contact Weston Wilson at extension 6562 regarding NEPA procedures, Robert Duraski at extension 6728 regarding 40 CFR 192 and the NESHAPS standards, Paul Mushovic at extension 6662 regarding remediation engineering and material transport, and Helen Dawson at extension 7841 regarding ground water clean-up.

Response:

DOE has consulted with EPA's Weston Wilson regarding the ratings for Klondike Flats and Crescent Junction alternatives. DOE and EPA informally agreed that the level of detail requested by EPA is not developed under UMTRCA until after the Record of Decision in the remedial action plan and that sufficient information is available in the EIS for decision-making. The on-site alternative and the White Mesa Mill alternative were not identified as the preferred surface remediation alternative based on the analyses in the EIS, the uncertainties regarding these alternatives, and comments on the draft EIS, including these EPA ratings. As appropriate, for subjects such as 40 CFR 192, National Emissions Standards for Hazardous Air Pollutants (NESHAPs), remediation engineering and material transportation, and ground water clean-up, DOE would contact EPA staff as needed during the development of the remedial action plan.
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Document #574 Comment #15 Commentor: U.S. Environmental Protection Agency

A. Description of the Proposed Action: DOE has been given responsibility for the now-abandoned Moab uranium mill tailings site near Moab, Utah. These tailings consist of approximately 12 million tons of previously milled uranium ores which contain radioactive materials that exceed concentrations limits set to protect human health as established in 40 CFR 192. DOE intends to take action to remediate the Moab site in accordance with UMTRCA Title 1. DOE is proposing to: 1) remediate these approximately12 million tons of contaminated material, 2) remediate about 40,000 tons of contaminated material located in Moab, known as 'vicinity properties' consisting primarily of residential and commercial buildings in the Spanish Valley, and 3) to develop a ground water remedy to clean up the contaminated ground waters underlying the tailings site. The alternatives analyzed in detail include either on-site or off-site locations to place these contaminated materials in a secure location. DOE needs to demonstrate for these remedies that the disposal cell cover and liner, institutional controls, and custodial care as required under UMTRCA, would be capable of providing long-term protection for at least 200 years or longer

Response:

DOE agrees that its selected remedy must be capable of providing long-term protection for at least 200 years or longer, as required under UMTRCA. As has been accomplished at numerous other remediated UMTRCA sites over the last 20+ years, DOE would develop a final disposal cell design for the selected surface remediation alternative that would be approved by NRC and that would meet or exceed the regulatory performance requirements.

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Document #574 Comment #16 Commentor: U.S. Environmental Protection Agency

B. Environmental and human health risks if no action is taken: The information provided by DOE, the National Academy of Sciences, and others demonstrated that a remedy must be capable of providing reliable long-term protection for people and the environment. If the tailings pile were left in place without remediation, the pile could emit radon gas, causing human health risks on-site.

Response:

DOE agrees with the comment. Leaving the pile in place without remediation is the No Action alternative analyzed in the EIS. The impacts of the No Action alternative from releases of radon from the pile are discussed in Section 4.6.15. These impacts include impacts from radon releases both to individuals located off the site and to individuals located on the site who might intrude into the pile.

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Document #574 Comment #17 Commentor: U.S. Environmental Protection Agency

For stream water quality, the primary contaminant of concern at the tailings pile includes uranium and ammonia. Uranium concentrations above 5 mg/L can occur in the river near Moab Wash which is about one hundred times the EPA-established requirement for uranium in drinking water of 0.044 mg/L (30 pCi/L). Ammonia currently exceeds 1000 milligrams per liter (mg/L) in ground water and at times exceeds 300 mg/L in river backwater areas which is toxic at times to native and endangered fish. These concentrations exceed by a factor of 100 the aquatic toxicity criteria for ammonia, which is 3.0 mg/L based on the hardness, temperature and alkaline pH of the Colorado River. The pile without remediation is likely to leach ammonia in toxic concentrations to aquatic life for centuries or even up to 1500 years.

Response:

DOE agrees that the No Action alternative would not be protective of surface water. Under the No Action alternative, exceedances of the applicable compliance criteria would occur over long time periods.

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Document #574 Comment #18 Commentor: U.S. Environmental Protection Agency

C. Comments of the application of certain regulatory requirements. In 1982, EPA produced the Final Environmental Impact Statement for Remedial Action Standards for Inactive Uranium Processing Sites to support the standards in 40 CFR 192 (EPA 520/4-82-013-1). This Final EIS document will be referred to as the 40 CFR 192 EIS. DOE, the Nuclear Regulatory Commission, and other federal agencies reviewed and commented on the Draft of the 1982 EIS. In many cases, statements and risks as presented in the Moab EIS differ significantly from the 40 CFR 192 EIS regarding application of the 40 CFR 192 standards. We suggest that the DOE's Final EIS for Remediation on the Moab Uranium Mill adopt the same procedures and conclusions used to calculate human cancer risks as presented in EPA's 40 CFR 192 EIS.

Response:

The methods and data used to estimate impacts in the two EISs are generally consistent. However, as required under NEPA, in some instances the Moab EIS used more current data for estimating human health and other impacts than were available in 1982 for the Final Environmental Impact Statement for Remedial Action Standards for Inactive Uranium Processing Sites (40 CFR 192).

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Document #574 Comment #19 Commentor: U.S. Environmental Protection Agency

Section 112 of the Clean Air Act is the legislative authority used by EPA to establish the National Emissions Standards for Hazardous Air Pollutants (NESHAPS). The Draft EIS indicates that NESHAPS requirements for radon flux do not apply during active remediation. NESHAPS requirements under 40 CFR 61 Subpart Q does not apply after final disposal or during periods of active remediation for Title II sites. However, Subpart T of the NESHAPS requirements is applicable two years after a Title I uranium mill site has become inactive (See 40 CFR 61.220 and 61.222 (b)). The Moab Uranium Mill tailings pile has been inactive and under DOE's authority for longer than two years. The Subpart T rule states that such tailings piles are required to meet the 20 pCi/m_2-s Radon (Rn-222) flux standard unless a compliance agreement is reached because it is not physically possible for the owner or operator to complete disposal within the two-year time frame. DOE's selection and implementation of its remedy to be defined in the Final EIS and the eventual ROD would likely satisfy the latter condition. It should also be noted the DOE is in compliance with Order 5400.5 as described in the Moab Annual Site Environmental Report (DOE-EM/GJ677-2004).

Response:

DOE concurs with the commentor that 40 CFR 61 Subpart Q does not apply to the Moab tailings. Because the Moab tailings are regulated under Title I of UMTRCA, Section 7.1.11 has been revised to state that the requirements of 40 CFR 61 Subpart T would apply to the final disposal site after long-term stabilization of the final disposal site had been completed as described at 40 CFR 61.223(e). Furthermore, DOE acknowledges the commentor's characterization of the 40 CFR 61, Subpart Q and Subpart T regulations, and agrees that the final EIS and eventual Record of Decision satisfy both EPA and DOE requirements with respect to compliance with 40 CFR 61, Subpart T regulations.

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Document #574 Comment #20 Commentor: U.S. Environmental Protection Agency

The calculation of radon daughter concentrations above the pile may not be consistent with 40 CFR 192 methods. The radon concentration above the pile is listed as being at 0.096 working level (WL) which corresponds approximately to 21 pCi/L of radon gas. Were both of these numbers the result of samples, or was an Equilibrium Ratio (ER) assumed? If an ER was assumed, it may not be valid. An ER of 0.45 above a tailings pile appears to be large since the samples were collected at a location where the radon decay daughters would have been removed when air migrates out of the tailings. Stripping of the radon daughter products should result in a lower ER as described in the 40 CFR 192 EIS. See page 46 of that EIS regarding in growth of radon decay products.

Response:

The radon concentration of 0.096 working level (WL) was measured using the modified Kusnetz method, which is one of the methods in NRC Regulatory Guide 8.30, Health Physics Surveys in Uranium Recovery Facilities, that is suitable for measuring radon progeny WLs. The method consists of sampling radon progeny on a high-efficiency filter paper for 5 minutes and, after a delay of 40 to 90 minutes, measuring the alpha counts on the filter during a 1minute interval. No assumption about the equilibrium ratio is made with this method. In addition, the radiation risks in the EIS are based on the measured WL value, not on the calculated value of 21 picocuries per liter (pCi/L), which was provided for illustrative purposes. For perspective, outdoor equilibrium ratios typically range from 0.3 to 0.8.

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Document #574 Comment #21 Commentor: U.S. Environmental Protection Agency

Department of Transportation (DOT) Transport Exemption. On January 26, 2004, the DOT changed the hazardous materials transportation rules as described at 49 CFR 171, 172 et al. Compliance with this new rule may mean that the Moab uranium mill tailings will have to be transported as Class 7 material. If the current exemption for these mill tailings from Class 7 material transport rules is no longer valid, this would increase the cost and time, due to the limited availability of Class 7 shipping containers. DOE should verify whether the current DOT hazardous waste transport exemption is still in effect under this new rule and state this in the Final EIS and recalculate costs and schedules accordingly.

Response:

For materials that require truck or rail transport, DOE is currently determining compliance requirements under the new rule. The previous exemption granted by DOT has expired, and DOE would apply for a new one specifically for the Moab site, depending on the alternative selected in the Record of Decision. Based on prior experience, DOE believes that DOT will grant a new exemption. However, DOE cannot exclude the possibility that an exemption would de denied and that the new Class 7 truck and rail-shipping requirements would be applicable for the Moab tailings and vicinity properties, which could add to current cost and schedule estimates. The applicable permits and exemptions are discussed in Section 2.2.4.1 of the EIS.

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Document #574 Comment #22 Commentor: U.S. Environmental Protection Agency

D. Comments on the Alternatives

1) Cap-in-Place On-site Because the tailings pile may continue to serve as a source of contamination for several hundred years, it will be difficult to achieve the remediation target goal in 80 years. The uncertainty of length of time needed for completion of the ground water clean-up remedy on-site should be clearly stated as part of DOE's upcoming decision to select a preferred alternative.

Response:

See responses to comments #1 and #5.

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Document #574 Comment #23 Commentor: U.S. Environmental Protection Agency

The key assumption used to estimate drainage from the tailings pile is that the infiltration rate after construction of the cap will be 1×10^{-8} centimeters per second (cm/s.) Other similarly constructed caps have shown that this low infiltration rate is difficult to engineer and maintain and therefore is likely to be higher. If the rate of infiltration through the cap is a magnitude greater, at 1×10^{-7} cm/s, drainage from the tailings pile will be an order of magnitude greater, significantly affecting the estimates of the impacts of the tailings pile on ground water contaminant concentrations. The result will be much higher concentrations in ground water, which may adversely impact surface water after the projected 80-year operation period for the ground water remediation system. The Draft EIS indicates that the infiltration rate through the tailings will decrease from the current conditions to 10^{-8} cm/s following construction of a cover. This would suggest that the gravity drainage would decrease from an estimated 8 gpm to 0.8 gpm with resulting transient drainage decreasing from the present estimate of 12 gpm to having no transient drainage within 20 years. Constructing a cover on the site meeting these hydraulic conductivities is problematic based on monitoring of other similar covers over time.

Response:

The commentor is correct that if the rate of infiltration through the cap is greater than 1×10^{-8} cm/s, then higher ground water concentrations would result. If the rate of infiltration through the cap is a magnitude greater, at 1×10^{-7} cm/s, the ground water concentrations would be the same as the No Action alternative. Under the No Action alternative, the proposed ground water concentration goal of 3 mg/L ammonia cannot be achieved. The No Action disposal alternative cover with a saturated hydraulic conductivity of 1×10^{-7} cm/s indicates that a maximum ground water concentration of approximately 6 mg/L ammonia would be achieved after 75 years. This concentration is twice as high as the ground water goal of 3 mg/L ammonia achievable for a 1×10^{-8} cm/s cover. Details of the No Action alternative cover are provided in Section 6 of the SOWP.

DOE agrees with the comment that a 1×10^{-8} cm/s cover may be difficult to construct. This uncertainty of the analytical modeling, which includes cover performance assumptions, and the effects on ground water remediation are discussed further in Tables S−1 and 2−33, item #1.

Document #574 Comment #23 - response continued

However, based on technical literature (Howell and Shackelford 1997; Estronell and Daniel 1992) and experience with other cover designs (Albright et al. 2004), the Department has a reasonable assurance that a cover can be successfully constructed with saturated hydraulic conductivity values that meet the ground water protection strategy requirements (1×10^{-8} cm/s). Further, it is explicitly contemplated in UMTRCA that long-term stewardship, including monitoring and maintenance of the institutional and engineering controls, would be applied to the site to ensure long-term performance and protection of public health and the environment.

Additionally, in the draft EIS, DOE proposed conceptually a moisture storage with capillary break, vegetated repository cover for the on-site disposal alternative and for the Crescent Junction and Klondike Flats off-site disposal alternatives. However, due to the high degree of geologic isolation afforded by the Klondike Flats and Crescent Junction sites, DOE believes the cover performance requirements for these sites may be less stringent than those for the on-site disposal alternative. After the Record of Decision, DOE intends to examine a range of cover designs, including moisture storage covers, for the selected alternative. The cover design details will be addressed in the remedial action plan.
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Document #574 Comment #24 Commentor: U.S. Environmental Protection Agency

Long-term risks to maintaining pile stability without remediation are due to the well-established risk of river flooding. Four flood events since the 1880s had a river stage high enough to inundate a portion of the tailings pile. As noted in our cover letter, river flooding is a significant long-term management problem that is compounded by unstable geologic conditions associated with possible river migration and dissolution of the underlying salt beds. EPA concludes that selection of an off-site remedy, which would avoid these geologic uncertainties, is needed in order to secure that DOE's long-term protection goals be achieved.

A very large flow event in Moab Wash may compromise long-term pile integrity. A probable maximum flood (PMF) in Moab Wash could occur during the summer rather than late spring snow-melt affected conditions which are more typical of Colorado River flooding conditions. We suggest the Final EIS provide more information than that provided which indicates that such flood flow velocities would be quite low over the Moab Wash bank. In the event of a such a catastrophic storm event in the Moab drainage basin, flows in Moab Wash could cause a re-routing of this stream channel and may undermine and potentially remove a portion of the engineered pile. Tailings and debris from the flood would be deposited on river banks and along sandbars immediately down-gradient from the confluence of Moab Wash and the Colorado River.

Response:

DOE agrees that four floods since the 1880s had a river stage high enough to inundate a portion of the tailings pile. Under the 100-year flood scenario, the river level would be approximately 4 feet above the toe of the pile, as occurred during the 1984 flood. During this flood, the unprotected pile was not breached because velocities decrease when the river flows over its banks. In the EIS, DOE acknowledges the potential for the pile to be inundated during floods (Sections 4.1.1 and 4.1.3). If the on-site disposal alternative were selected, the side slopes would be protected by riprap and the toe of the pile would be protected by an engineered barrier to river migration, as described in Section 2.1.1 of the EIS. It is DOE's opinion that these measures would make the probability of a catastrophic failure of an on-site disposal cell very low. Recent USGS data on potential flood velocities that might occur at the pile would be utilized for the final design of the riprap side slopes and the barrier wall if the on-site disposal alternative were selected.

With regard to the comment about a large flow event in Moab Wash, Sections 2.1.1.1 and F2.1.2 of the EIS include the following proposed actions. The existing Moab Wash would be rechanneled to run through the former millsite area. Rechanneling would begin before completion of the disposal cell. The reconfigured channel would discharge into the river upstream near the approximate location of the pre-operations discharge point. The channel would be designed to carry runoff that has the approximate magnitude of a 200-year flood. Flood protection along the base of the pile would protect it from more significant floods.

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Document #574 Comment #25 Commentor: U.S. Environmental Protection Agency

2) Klondike Flats Alternative Site: This site does not have geologic uncertainties like that on-site. The Klondike Flats location has a depth to groundwater protected by approximately 1000 feet of the impermeable Mancos Shale. Constructing the optional slurry line to transport the Moab tailings would reduce the highway safety concerns, but does not eliminate them, because a substantial portion of the tailings may prove to be unsuitable for slurry transport. This could require significantly more truck transport for the slurry line not considered by DOE. The site has some environmental concerns due to conflicts with recreational vehicles within the same valley. Borrow materials for cover material will need to be hauled from locations on BLM lands.

Response:

See responses to comments #4 and #9.

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Document #574 Comment #26 Commentor: U.S. Environmental Protection Agency

3) Crescent Junction Alternative Site: This site also lacks the problems with future geologic uncertainties like that on-site. The Crescent Junction location also has suitable depth to groundwater protected by approximately 4000 feet of impermeable Mancos Shale. Although rail transport requires a longer haul than the Klondike site, this does not increase cost significantly, as the costs are principally related to the conveyer operational costs associated with loading and unloading material. Rail transport to Crescent Junction can use the existing separate grade crossings under US-191 and Interstate 70. This site has an environmental advantage compared to other sites because suitable cover material can be obtained at the proposed cell location resulting in less land disturbance.

Response:

The commentor's synopsis of the Crescent Junction site conditions and logistics is consistent with the information presented in the EIS. See responses to comments #4 and #10.

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Document #574 Comment #27 Commentor: U.S. Environmental Protection Agency

4) White Mesa Mill Alternative Site: The White Mesa site is overlain by wind- blown soils and there is a perched ground water table in the Burro Canyon Formation immediately underlying the site. DOE proposes waste cells to meet UMTRCA standards. EPA does not object to the application of UMTRCA requirements for geologically suitable site conditions. However, this site will require significant improvements to the proposed waste cell design in order to assure long-term compliance with the more rigorous ground water protection requirements of the State of Utah. For example, the design that is presently being employed for the reconstruction of disposal cell 4A would meet the groundwater protection regulations for the state of Utah.

Response:

See response to comment #11. In developing the cell design, DOE would utilize knowledge and experience gained from its managing 22 UMTRCA Title I cleanup projects for more than 20 years.

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Document #574 Comment #28 Commentor: U.S. Environmental Protection Agency

Transportation concerns and long-term risks to ground water of this remedy, as proposed and designed, could be significant unless additional design measures are implemented. Truck transport presents a high risk of vehicular accidents. The increase in truck traffic along US191 would be up to 1200 trucks per day resulting in almost a doubling of the truck traffic along this highway.

Response:

The potential for both truck accidents and increased traffic that would result under each alternative are quantified in the EIS, especially in Appendix H (Transportation Impact Analysis). These impacts will be considered in DOE's final decision. Although truck transportation risks are greater than rail risks, DOE does not agree that the risk of vehicular accidents would be "high." Nevertheless, DOE agrees that it would be prudent to minimize the potential risks for all transportation options.

With regard to the ground water aspect of the comment, DOE would work with cooperating federal and state agencies to ensure that the ground water component of the remedial action plan would comply with 40 CFR 192 remediation standards.

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Document #574 Comment #29 Commentor: U.S. Environmental Protection Agency

There will be a significant increase in ambient and night-time noise in the communities of Moab, Monticello, and Blanding. Since US-191 passes residential properties in Moab, residents in these homes could be exposed to noise levels above the Moab residential standard of 65 dBA. As haul trucks increase their speed south of Moab, the area that will experience ambient noise conditions greater than 65 dBA will be over 400 feet from the highway (Draft EIS at page 4−139.) Residents in Monticello and Blanding will also likely experience noise levels above this standard, even though speed limits are 30 mph within these communities. Because these communities now experience little nighttime disruptive noise conditions, this will result in a significant impact to these residents.

Response:

Section 4.4.10 describes the noise increase under the White Mesa Mill disposal alternative using trucks as the mode of transportation. The night-time impact is discussed in Section 4.4.10.5. The average noise levels and region of influence are quantified in Table 4−45.

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Document #574 Comment #30 Commentor: U.S. Environmental Protection Agency

1) Truck and Rail Transport: Alternatives to using petroleum diesel fuel – For the truck and rail transport options, DOE should investigate the environmental and equipment operational advantages of using a mixture of vegetable oil and diesel fuels known as biodiesel. Combustion of biodiesel fuels emits less carbon monoxide and offers up to a 10 to 15 percent reduction in particulates and hydrocarbon emissions compared to petroleum diesel. Using biodiesel fuels results in releasing less climate-changing CO_2 emissions based on initially capturing atmospheric carbon during oil-plant growth. Usually these fuels are produced from dry-crop farming of soy, canola or mustard seed, which do not require supplemental irrigation water. Heavy equipment run on twenty percent blend of vegetable oil and petroleum diesel, known as B20 fuel which is 20% vegetable oil and 80% petroleum diesel, has proven reliable in winter conditions with climates more severe than eastern Utah. The twenty percent blends, or lower, do not gel in severe cold. Biodiesel fuels provide engine operational advantages due to their viscosity properties which may extend engine life and reduce engine maintenance requirements. Biodiesel can also increase engine efficiency because it has a higher cetane rating than petroleum diesel. Although B20 fuel costs more than petroleum diesel fuel, a renewable energy subsidy will become effective in 2005 for blender of biodiesel fuels. This federal subsidy will provide one cent per percent of blended vegetable oil to the fuel blender companies. This means that a blender of B20 biodiesel fuels will receive a tax credit of 20 cents per gallon which could offset the cost differential so that B20 biodiesel fuel prices may then equal the cost of petroleum diesel.

Response:

If feasible, practical, and available, DOE would use environmentally preferred fuels and energy sources. While DOE agrees with the commentor's point, a balance of costs and benefits to taxpayers (and the environment) must be considered in selecting energy sources.

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Document #574 Comment #31 Commentor: U.S. Environmental Protection Agency

2) Rail Transport: DOE has indicated that as many as 2,200 trucks would be required to transport oversized and demolition debris to the off-site alternatives. The upper size-limit constraint for a conveyor belt might be several inches to a foot in diameter. Therefore, if the pile contains additional oversized material than currently estimated, this should not be a significant issue for rail transport.

Response:

DOE concurs with the comment. Based on project files and on-site experience, DOE estimates that 35,000 cubic yards (yd^3) of debris would not be transportable by rail due to size or shape constraints. This is described in Section 2.2.4.2 of the EIS. The volume size limits for material that could be placed on the conveyor belt would be developed in the remedial action plan.

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Document #574 Comment #32 Commentor: U.S. Environmental Protection Agency

3) Slurry Transport: The average particle size is critical to operating the slurry pipeline option. The upper-size constraint for the slurry pipeline will be less than .03 inches. The amount of material unsuitable to be slurried could be a significant problem with potentially tens times as much material in the pile that must be truck-hauled if the slurry line is selected. The Final EIS should also include a thorough discussion of the uncertainties associated with the process of evaporative drying of slurried tailings in order to meet optimal moisture content for placement and compaction. Once placed into a cell, even if placed at optimal moisture content, transient drainage will continue for perhaps 25 years. If the tailings were to be placed at conditions above the optimal moisture content, then transient drainage from such tailings may extend considerably longer. Because the Mancos Shale beneath the Klondike and Crescent Junction provides much greater protection to surface and ground water than does the White Mesa site, the differences in slurry transport by alternative should be defined. DOE has estimated that the Klondike site and Crescent Junction site would provide ground water protection for upwards of 25,000 years. At the White Mesa site, it is estimated that ground water travel time to points of exposure at surface springs is estimated to be within 3,600 years. A possible discharge point is Ruin Spring, located about two miles south-southwest of the White Mesa Mill.

Response:

DOE acknowledges the commentor's concerns, and they will be considered in DOE's final decision-making. The responses to comments #9 and #10 address truck traffic associated with slurry transport and slurry moisture content. The EIS acknowledges that under the White Mesa Mill disposal cell conceptual design, contaminants could potentially impact surface springs within several thousand years (Section 4.4.3), which is well beyond the requisite period of compliance (200 to 1,000 years).

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Document #574 Comment #33 Commentor: U.S. Environmental Protection Agency

The possibility of pipe ruptures or leaks and potential contamination of underlying ground water and surface water resources needs to be discussed. The proposed slurry pipeline route to Klondike Flats crosses an area of shallow groundwater in the Cedar Mountain Formation. The slurry pipeline route to White Mesa crosses the Colorado River and Matheson Wetlands. Ruptures in any of these areas could result in undesirable environmental consequences and this should be addressed in the Final EIS.

Response:

DOE concurs that these events and impacts would be possible, as they are wherever pressurized infrastructure is placed. However, as described in Section 2.2.4.3, the pipeline system would include instrumentation that would detect leaks and shut the system down before a large quantity of material could be released. DOE estimates that less than 5.2 yd^3 would be spilled before system shutdown. Given this small quantity and the relatively low probability of such an accident, DOE does not believe that further analyses are warranted.

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Document #574 Comment #34 Commentor: U.S. Environmental Protection Agency

1. The time frame for operating a groundwater remediation system is given as 75 years for the off-site alternatives and 80 years for the on-site alternative. EPA agrees with the estimate for the off-site alternatives, but believes the time frame for the on-site alternative should be expressed as much longer range, for example, 80 – 1000+ years considering the very large uncertainties in the concentrations leaching through the tailings pile and long time frame the tailings pile is likely to serve as a source of leachate. The 80-year time frame is intended to represent only the period needed to flush the legacy plumes and not potentially more leaching that could result if the cover failed to all subsequent additional infiltration.

Response:

The commentor is correct that the leaching effects of an ammonia salt layer found in the upper 10 feet of the tailings pile would not be observed at the underlying water table for 1,000+ years. DOE did not simulate this effect with the flow and transport model or estimate costs, because the regulatory time period for the design of the cell is 200 to 1,000 years (40 CFR 192). Furthermore, as discussed in the SOWP (Section 6), attenuation processes (i.e., biological degradation, sorption, etc.) make it likely that ammonia concentrations in the tailings fluid near the base of the pile would be considerably less. In addition, since the salt layer is found in the upper 10 feet of the pile, it may also be possible to mitigate the salt layer by excavation and aboveground treatment prior to placing the cap. DOE would consider such mitigation if the on-site alternative were selected.

The estimated time frames of 75 years for the off-site alternative and 80 years for the on-site alternative are used in this EIS for purposes of comparing ground water remediation options. Uncertainties related to the remediation time frames, costs, etc., are addressed in Tables S−1 and 2−33, item #1. Uncertainties related to the potential salt layer are addressed in item #18 of these tables.

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Document #574 Comment #35 Commentor: U.S. Environmental Protection Agency

2. Several long-term impacts of the on-site alternatives need to be discussed in the summary section, including:

a. The high ammonia concentrations (one order of magnitude higher than current concentrations) that are anticipated to exit the tailings pile in approximately 1000 to 1500 years and potentially adversely impact ground and surface water concentrations for hundreds of years.

b. The rate at which salt bed-based dissolution subsidence under the pile could lower the pile relative to the Colorado River level which may be 1 to 1.5 foot per 1000 years. In the near term, this may lead to wetting of the base of the pile during high river stages and potentially increased contaminant concentrations entering the groundwater system. In the longer term, the subsidence will result in permanent tailings contact with the ground water.

Response:

The potential release of ammonia (comment “a”) from a suspected salt layer within the pile is summarized in Tables S−1 and 2−33, item #18. The summary also indicates that natural basin subsidence would result in permanent tailings contact with the ground water in 7,000 to 10,000 years (comment “b”). The regulatory time period for the design of the cell is at least 200 years but not to exceed 1,000 years (40 CFR 192). Under the analytical assumptions in the EIS, dissolution of the salt beds and subsidence in the vicinity of the disposal site is on a geologic time frame that is well beyond the regulatory design period. However, DOE acknowledges substantial uncertainties in the long-term applicability of these assumptions, particularly beyond the time frame during which DOE can reasonably guarantee the maintenance of active institutional controls.

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Document #574 Comment #36 Commentor: U.S. Environmental Protection Agency

3. The EIS addresses only ammonia standards, as these are currently the driver for surface water impacts. The assumption is made that the other constituents of concern will be reduced to acceptable levels in the same time frame as for ammonia, but no basis is provided for this assertion. The identified constituents of concern have different solution chemistries and sorptive characteristics and, consequently, are likely to have different fate and transport projections.

Response:

As stated in the EIS, DOE presumes that these other contaminants of concern would reach protective levels within the same time frame that it would take for ammonia to reach protective levels because their concentrations are less elevated above applicable cleanup criteria (e.g., surface water standards), the constituents are less widespread, or they occur at elevated concentrations less frequently. Specifically, Section 5.6 of the SOWP (DOE 2003a) describes the distribution of major and minor constituents in the surface water system. The Biological Assessment, Screening of Contaminants (Appendix A2) evaluated these surface water data against the background concentrations as well as aquatic benchmark values. This evaluation identified only the constituents ammonia, manganese, copper, uranium, and sulfate as being contaminants of potential concern.

Section 2.3.1.2 has been expanded to include DOE's rationale on this issue. Site-specific modeling of the tailings' long-term seepage indicates that seepage rates will decrease 25-fold from the current rate of approximately 20 gpm (Figure 6−3, Table 6−3 of the SOWP) to the predicted long-term flux of 0.8 gpm. This 25-fold decrease in volumetric and contaminant mass flux from the tailings, coupled with the 10-fold average dilution of ground water observed in surface water concentrations, is anticipated to result in decreases in contaminant surface water concentrations below aquatic benchmark and/or appropriate water quality standards without any geochemical transformations beyond simple dilution, which are likely to occur as well. For example, the maximum observed copper concentrations in the surface water adjacent to the site range from approximately 5 mg/L to 14 mg/L, while the Utah Water Quality Criteria is 12 mg/L. Similarly, maximum observed manganese concentrations in surface water exceed the aquatic benchmark value of approximately 0.01 mg/L in only five locations, with the all-time maximum of 11.5 mg/L (it should be noted that natural manganese background ground water concentrations of 19 mg/L to 38 mg/L have been observed). The maximum observed uranium surface water concentration is approximately 5 mg/L, roughly 100 times the aquatic benchmark of 0.04 mg/L, and the maximum observed sulfate surface water concentration is approximately 14,000 mg/L, roughly 28 times the upper range of background sulfate concentrations (439 mg/L). Therefore, there exists a reasonable assurance that the resulting 250-fold decrease in future surface water concentrations predicted from decreased tailings seepage, coupled with ground water dilution through mixing with surface water, will result in long-term protective concentrations for all constituents of concern.

However, DOE acknowledges in the EIS that there is uncertainty in this assumption due to factors such as differences in solute transport and sorption mechanics.
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Document #574 Comment #37 Commentor: U.S. Environmental Protection Agency

4. Potential to increase the rate of leachate flushing using a pond. The following option for ground water clean-up could be investigated as a means to reduce the length of time necessary to meet surface and ground water criteria. We suggest evaluation of the advantages of creating a new hydraulic head in order to more rapidly drive the ground water plume. For the off-site alternatives, the area exposed after tailings pile removal could be designed for a shallow pond of from 4 to 6 feet. With an increased hydraulic head driving the legacy plume, the ground water and surface water quality may be able to meet standards sooner, thus reducing costs of the proposed ground water clean-up remedy.

Response:

The cleanup options presented in the EIS are for purposes of comparing alternatives. As stated in the EIS, the final long-term ground water clean-up design would be developed after the Record of Decision. Evaluation of the potential advantages in the design would be performed as part of the design process. DOE agrees that it is a good idea to explore remedial designs that could result in an expedited cleanup because, if effective, such designs may result in cost savings.

In developing the cell design, DOE would utilize knowledge and experience gained from its managing 22 UMTRCA Title I cleanup projects for more than 20 years.

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Document #574 Comment #38 Commentor: U.S. Environmental Protection Agency

DOE should emphasize that the assumptions related to capping performance for on-site remedy critically affect the estimated time to achieve the ground water remedy. The critical assumption to constructing and then maintaining the cover to assure hydraulic conductivity remains at the 10^{-8} cm/sec infiltration limitation. If this is not assured, contaminants may leach into ground water at a significantly higher rate and persist longer than currently predicted by DOE.

Response:

Table 2−33, item #1, in the EIS has been expanded to clarify this assumption and potential consequences.

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Document #574 Comment #39 Commentor: U.S. Environmental Protection Agency

The advantages of a waste cell cap design based on achieving a water balance through soil and vegetative evapo-transpiration (ET) should be investigated. DOE participated with EPA and the State of Utah in the final design and construction of an ET-water balance cover for the Monticello Mill Tailings Site. EPA's Alternative Cover Assessment Program, a program that DOE has participated in, has also shown the advantage of similar type construction in semiarid environments. We believe that the 10^{-8} cm/s hydraulic conductivity that DOE needs to attain on the cover for the cap-in-place alternative is more likely to be assured with an ET - water balance cover.

EPA studies in the ACAP program have suggested that constructing covers with compacted clay liners to achieve hydraulic conductivities of 10^{-7} cm/s has been difficult, requires extensive

Document #574 Comment #39 - continued

QA/QC, and in the long term may be problematic. Will there be lysimeters or other moisture probes in the cover to determine if the necessary saturated hydrologic conductivity and or flux through the cover is being met? Although the initial UMTRA program requirements included predictive modeling methods must show success, the latest revision of DOE's Technical Approach Document (page 220) recognized that monitoring of the cover to assure that performance criteria were met might also be necessary.

Evidence from the Monticello water balance - ET cover, indicates that the hydraulic conductivity has met or exceeded the design criteria. The Monticello cover performance data shows that the NESHAPS requirements for radon emissions were adequately met following placement and compaction of the vicinity property material. The clay barrier constructed over the vicinity property material provided redundant protection for radon emissions.

The need for a bio-intrusion barrier will depend upon the risks to cover integrity from the terrestrial rodent species present and any other rodent species which might occupy the area following completion of waste disposal cell. What additional studies will DOE conduct before making a decision as to whether or not a bio-intrusion barrier will be required? Should a bio-intrusion barrier be required, then additional rock material (cost and transportation impacts) has not been considered in the present scenarios. In addition, if construction of capillary barrier in a six-inch lift across the entire cover appears to be prohibitive due to constructability problems, then perhaps a one-foot lift would be required to meet the performance goals assumed in the design. Based on EPA's review of the conceptual design, as much as 18 additional inches of rock material over the entire cover might be required. These quantities have not been addressed in either the cost or transportation segments of the EIS or the impacts upon potential borrow areas. Note that for the Crescent Junction site, rock material necessary for both the capillary break and/or a bio-intrusion barrier appears to be available from sources close to these sites or necessary materials could be hauled in by rail to avoid additional truck hauling through Moab.

Response:

Advantages and disadvantages of different cover components (for example, a biointrusive barrier or radon barrier) would be investigated during development of the actual engineering design, which would be performed after the Record of Decision. The on-site disposal and off-site disposal designs, as stated in the EIS, are conceptual for the purpose of comparison between alternatives. Alternative sources for rock material not evaluated in the EIS for a capillary break or biointrusion layer would be examined as part of the post-Record of Decision remedial action planning. Also see response to comment #23.

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Document #574 Comment #40 Commentor: U.S. Environmental Protection Agency

Executive Summary, Page S−8 Off-Site Disposal, and second sentence: DOE estimates that the total volume of material to be removed from the site is approximately 11.9 million tons. However, DOE recently provided information that the contaminated soil adjacent, or off-pile, was at least twice the volume used to provide the 11.9-million-ton estimate (i.e., off-pile contaminated soil has increased from 234,000 tons to greater than 500,000 tons). DOE has also used in its projections a contaminated sub-pile soil thickness of only 2 feet (which results in sub-pile amount of 566,000 tons). This thickness and volume was based on limited bore hole data. EPA believes that the sub-pile contaminated thickness is understated significantly and is not supported based on conditions found at other UMTRCA piles. In order to quantify the range of materials for the alternative transportation modes, it would be prudent to use a higher estimate, perhaps up to 13 million tons. This would allow for volumes associated with off-pile contamination and contaminated materials needing removal beneath the pile.

Response:

As identified by the commentor, based on recent survey data that were not available at the time the draft EIS was developed, the Department has increased its estimate of the quantity of the contaminated off-pile soils. Currently, DOE believes that the off-pile contaminated soil volumes could be 50 to 100 percent greater than estimated for the draft EIS. However, because this represents less than 1 percent change in the total volume of material that would be transported under the off-site alternative, no changes have been made to text or tables, and the volumes given in the draft EIS have been retained for the final EIS. The Summary, Sections 2.1.1.2, 2.2.4, and other text sections have been modified to reflect this issue.

Review of the available data indicates that sub-pile soil contamination depth varies widely within a given UMTRCA site and between UMTRCA sites whose tailings have been relocated. The estimate for the Moab site was based on site-specific data. The EIS addresses the uncertainty regarding the quantity of the sub-pile soils in Section 2.6, as well as the impacts should this quantity be larger than assumed. In addition, the uncertainty of costs associated with additional remediation quantities are addressed in Section 2.7.3 through the addition of a 10-percent contingency on the total project estimate and the qualification that the budget estimate is expected to fall within the range of -15 percent to +30 percent.

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Document #574 Comment #41 Commentor: U.S. Environmental Protection Agency

Page S−10 Ground Water Compliance Strategies: The enclosed text indicates that DOE may apply for supplemental standards. Supplemental standards have to be approved by the NRC. Does the NRC support the application of supplemental standards for ground water at this site?

Response:

DOE is proposing to remediate ground water under EPA regulations 40 CFR 192, the regulations promulgated by EPA to ensure that UMTRCA sites would not be subject to regulation under both federal and state law. Regardless of whether surface remediation involved on-site or off-site disposal, active remediation is proposed for contamination remaining in ground water beneath the Moab site to prevent further degradation of surface water quality. This active remediation would be conducted in conjunction with the application of supplemental standards provided under 40 CFR 192. Applying supplemental standards would be reasonable because the natural background water quality in the alluvial aquifer is poor, as evidenced by TDS concentrations that range from a low of 677 mg/L to over 97,000 mg/L. Because ground water in the major portion of the aquifer has a TDS content exceeding 10,000 mg/L, the aquifer meets the definition of a limited-use aquifer as described in EPA's Guidelines for Ground-Water Classification Under the EPA Ground-Water Protection Strategy (EPA 1988). DOE would work closely with the NRC to develop appropriate supplemental standards that the NRC could support.

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Document #574 Comment #42 Commentor: U.S. Environmental Protection Agency

Page S−10; Section 1.4.3 Groundwater Remediation: Last paragraph; Section 2.3.2.2. Implementation of Ground Water Remediation. Figure 2−42; Section 2.3.2.4. Active Remediation Operations; Section 2.6.1. Impacts Affecting the Moab Site and Vicinity Properties….; Table 2−32. In each of these sections, the time frame for the on-site alternatives should be expressed as a range (such as from 80 – 1000+ years) to account for the significant uncertainties in the concentrations leaching through the tailings pile and the long time frame the tailings pile is likely to serve as a source of leachate. The 80-year time frame represents with any certainty only the period needed to flush the legacy plumes.

Response:

See response to comment #34.

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Document #574 Comment #43 Commentor: U.S. Environmental Protection Agency

Page S−10 Ground Water Remediation: The second paragraph on this page identifies ammonia and other site-related constituents. Please identify the other constituents that have elevated concentrations in the Colorado River adjacent to the site. Are there concentrations or volumes in the pile that could cause excessive environmental damage in either the short-term or long-term scenario?

Response:

See response to comment #36.

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Document #574 Comment #44 Commentor: U.S. Environmental Protection Agency

Page S−12 Disposal Site, Transportation, and Vicinity Property Impacts, Geology and Soils Note that the estimate of approximately 234,000 tons of contaminated site soil needs to be increased per DOE's subsequent estimates. Please also consider the impact on the amount of soil that would be necessary to reclaim the site. DOE has indicated that 424,867 yds3 of material would be brought back to the site for reclamation in the event that the pile is moved. Since much of the remaining off-pile contaminated material appears to be at the toe of the pile and/or in levees constructed during operations at the site, does DOE believe this estimate for reclamation is adequate or should this be increased?

Response:

The commentor is citing the summary of the document. Based on recent survey data that were not available at the time the draft EIS was developed, the Department has increased its estimate of the quantity of the contaminated off-pile soils. Currently, DOE believes that the off-pile contaminated soil volumes could be 50 to 100 percent greater than estimated for the draft EIS. However, because this represents less than 1 percent change in the total volume of material that would be transported under the off-site alternative, no changes have been made to text or tables, and the volumes given in the draft EIS have been retained for the final EIS. The Summary, Sections 2.1.1.2, 2.2.4, and other text sections have been modified to reflect this issue.

Section 3.1.3.1 also acknowledges that the actual volume of windblown contamination may exceed the estimated volume characterized by a range of 50 to 100 percent, which is consistent with DOE's experience at other UMTRCA sites. Section 2.2.1.3 of the EIS states that the volume of reclamation soil is approximate. Table 2−33, item #4, specifically addresses the uncertainty associated with the mass and volume of excavated contaminated soil and reclamation soil. It is likely that the estimated volumes could be greater. However, the volumes of contaminated soil and reclamation soils presented in the EIS represented DOE's best estimate based on currently available information, and they were used as a constant for purposes of comparing alternatives and assessing impacts relative to each alternative. DOE would adjust these estimates in the remedial action plan if more current or precise data so dictates.

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Document #574 Comment #45 Commentor: U.S. Environmental Protection Agency

Page S−14 Surface Water: DOE states that the removal of the pile coupled with the estimated 75 years of active ground water remediation would result in permanent protection of surface water quality. In the next sentence, DOE suggests that equal protection will be provided for the on-site disposal alternative if active ground water remediation continues for an estimated 80 years. DOE should mention the critical assumptions under which this will occur and how this is connected to the designed hydraulic conductivity of the cover of achieving the10^{-8} cm/sec design and how would this time be extended due to the potential effects from a 100-year and or 500-year flood event?

Response:

Critical assumptions, including the saturated hydraulic conductivity used in the ground water flow and transport model, are described in Section 6 of the SOWP. The consequence of using an erroneous value for the ground water transport or flow input parameters is described in the EIS (Tables S−1 and 2−33). Details of the uncertainties are provided in the prediction uncertainty analysis section in the SOWP.

Under the 100-year flood scenario, the river level would be approximately 4 feet above the toe of the pile, as occurred during the 1984 flood. During this flood, the unprotected pile was not breached because velocities decrease when the river flows over its banks. In the EIS, DOE acknowledges the potential for the pile to be inundated during floods (Sections 4.1.1 and 4.1.3). If the on-site disposal alternative were selected, the side slopes would be protected by riprap and the toe of the pile would be protected by an engineered barrier to mitigate against river encroachment, as described in the EIS. While additional ground water contaminants would likely be released to the environment during 100-year or greater floods, the resulting impacts to human health and the environment would not be catastrophic and have been discussed in Section 4.1.3 of the EIS. The EIS further states, in Section S.1 and Section 4.1.3.1, that under the on-site disposal or No Action alternatives, a Colorado River 100- or 500-year flood event could release additional contamination to ground water and surface water. The EIS also states that under the on-site alternative, the increase in ammonia concentrations due to floodwaters inundating the pile would be minor, and the impact on river water quality would rapidly decline over a 20-year period.

It should also be noted that based on technical literature (Howell and Shackelford 1997; Estronell and Daniel 1992) and experience with other cover designs (Albright et al. 2004), the Department has a reasonable assurance that a cover can be successfully constructed with saturated hydraulic conductivity values that meet the ground water protection strategy requirements (1×10^{-8} cm/s). Further, it is explicitly contemplated in UMTRCA that long-term stewardship, including monitoring and maintenance of the institutional and engineering controls, would be applied to the site to ensure long-term performance and protection of public health and the environment. Also see responses to comments #23 and #39.

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Document #574 Comment #46 Commentor: U.S. Environmental Protection Agency

Page S−17 Cultural Resources: Because 20 to 25 cultural resource sites potentially impacted with the Klondike and Crescent Junction alternatives are principally due to the slurry pipeline new construction and the new Klondike borrow areas, this summary seems to overstate these cultural resource impacts with respect to both the truck or railroad alternative transport methods.

Response:

The Summary states that "The Klondike Flats alternative could adversely affect a maximum of 35 to 53 eligible sites (depending upon transportation mode)...". Under the truck option, a maximum of 36 sites could be affected, and under the rail option, a maximum of 35 sites could be affected (see Tables S−5 and 2−32). Neither of these numbers includes the 6 to 20 sites that could be adversely affected by pipeline construction under the slurry option (a total of 53 sites could be adversely affected under the slurry option). Therefore, no overstatement has been made for the truck and rail options. Section 4.2.9.5 and Table 4−24 of the EIS provide details of how these numbers were calculated. Likewise, under the Crescent Junction disposal alternative, the numbers of cultural sites that could be adversely affected under the truck and rail options (12 and 11, respectively) do not include cultural sites that could be affected by pipeline construction. Section 4.3.9.5 and Table 4−32 provide details of cultural impacts associated with the Crescent Junction alternative.

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Document #574 Comment #47 Commentor: U.S. Environmental Protection Agency

Page S−19 Visual Resources: The newly constructed disposal cell need not necessarily have a strong contrast with the surrounding natural landscape. This will depend on the final cell configuration, the materials used to construct the cover, and other landscaping that DOE employs to mitigate the contrasts. Elsewhere in the EIS it states that the present pile has a moderate contrast with the surrounding landscape. If proper materials are selected, it would appear that the final disposal cell would not be significantly different from the current moderate contrast to visual conditions.

Response:

The Summary states that the strong contrast formed by the newly constructed cell would lessen slightly over time. The EIS provides further detail. Section 4.1.11.1 states that the final disposal cell would have a moderate contrast with the surrounding landscape in the long term. The commentor is correct in that this would not be significantly different from the current moderate contrast.

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Document #574 Comment #48 Commentor: U.S. Environmental Protection Agency

Page S−33 text and Figure S−24 Borrow Material: Based on prior experience by EPA staff, we believe the amount of rock riprap and the gravel necessary for construction of an adequate capillary break may be underestimated. The construction of a 6-inch capillary break across the pile may have significant constructability and performance issues. If a bio-intrusion layer were needed, it would also increase the amount of rock required for the on-site cell significantly.

Response:

As stated in the EIS, the cover design is conceptual for purposes of evaluating alternatives. Details of the actual design would be developed after the Record of Decision. In developing material estimates for the cell and borrow materials, DOE utilized knowledge and experience gained from its managing 22 UMTRCA Title I cleanup projects for more than 20 years. DOE believes the estimates in the EIS are appropriate. However, DOE recognizes and has acknowledged that uncertainties exist that could affect these estimates. For example, in the EIS, DOE acknowledges that uncertainties exist in estimates of the mass and volume of excavated contaminated material and reclamation soil (see response to comment #44). These uncertainties would have a flow-down effect specifically addressed in the “consequences” section of this uncertainty.

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Document #574 Comment #49 Commentor: U.S. Environmental Protection Agency

Page S−34 Consequences of estimating cost and impacts, third paragraph: This states that: "DOE has employed reasonable conservatism in characterizing the costs, resources and impacts…" However, the volume of material could be greater, diesel prices may increase, and the schedule may be extended. DOE estimates a total volume of tailings of 11.9 million tons; however, the volume of tailings that was eventually moved at other UMTRCA sites usually exceeded the volume characterized during the planning period by significant percentages. If DOE would use an estimate of 13 million tons to estimate cost for off-site disposal, this might better reflect upon this prior experience. Second, diesel fuel prices have increased significantly since the initial draft EIS information was prepared. DOE's proposed schedules are optimistic projections. During public presentations, the DOE staff usually identify that its predicted schedules are optimistic and may not be realized. Significant time delays will also increase the overall cost.

Response:

DOE acknowledges uncertainties in the Summary (Table S−1) and in the EIS (Section 2.6.3). Cost is one of those uncertainties (Section 2.7.3). Given that costs are a function of the volume of tailings remediated, time, fuel prices, and other factors, DOE acknowledges that costs are estimates only. Section 4.1.14 discusses the basis for the estimates. While costs would be higher for off-site removal, many factors, including potential future environmental impacts, will be considered in DOE's final decision-making.

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Document #574 Comment #50 Commentor: U.S. Environmental Protection Agency

Page S−36 Table S−1, Ground Water and Site Conceptual Model Assumptions: A significant uncertainty which needs to be addressed in the Final EIS is the problem of constructing a cap or cover which will retain the necessary hydraulic conductivity over the long term (cover capable of assuring a hydraulic conductivity of less than 10^{-8} cm/sec).

Response:

See responses to comments #23, #39, and #45.

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Document #574 Comment #51 Commentor: U.S. Environmental Protection Agency

Page S−38 Table S−1, Consequences of underestimating mass and volume of excavated contaminated soil and reclamation soil: DOE states that under the on-site disposal alternative, there would be a commensurate increase in the amount of material to be disposed of in the Moab pile (surcharge). If DOE intends to construct a convex cover with positive drainage, the existing bowl within the concave repository could accommodate the off-pile contaminated materials. As stated previously, there are other reasons to believe that the amounts of material to reclaim the site and construct the repository cover may be significantly underestimated.

Response:

See responses to comments #44 and #48.

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Document #574 Comment #52 Commentor: U.S. Environmental Protection Agency

Page S−45 Table S−1 Consequences of low cost estimates: The uncertainties of cost projections of each alternative should be highlighted, since the uncertain factors included in this table could result in significant cost changes to each alternative, perhaps on the order of 50 percent greater than the present cost estimates, if the worst case of each uncertain factor did occur.

Response:

Annual costs that would result from uncertainties are included in Tables S−1 and 2−33 under the individual uncertainty discussions. Because neither the likelihood of occurrence nor the duration of each identified uncertainty can be established, the cumulative cost of all uncertainties cannot be meaningfully calculated. The uncertainty of costs is in part addressed in Section 2.7.3 through the addition of a 10-percent contingency on the total project cost estimate and the qualification that the budget estimate is expected to fall within the range of 15 percent to +30 percent. It is DOE's opinion that the existing cost analyses, along with the environmental impact analyses provided in the EIS, consideration of the consequences of the uncertainties characterized in the EIS, and the comments received on the draft EIS, will be sufficient to support DOE's final decision for remediation of the Moab site.

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Document #574 Comment #53 Commentor: U.S. Environmental Protection Agency

Page S−47 Major Conclusions, fourth bullet: There are many uncertainties as to whether the construction and performance of the cap-in-place will perform as designed. If the cap fails to perform as designed, this will potentially impact the length of time necessary to remediate the ground water because maintaining the design hydraulic conductivity of the cover over the long term will be difficult to assure.

Response:

The commentor is correct that if the cap failed to perform as designed, then the time frame to reach the proposed 3-mg/L ammonia ground water concentration would potentially be extended. It is also possible that the 3-mg/L ammonia concentration would not be achieved. However, based on technical literature (Howell and Shackelford 1997; Estronell and Daniel 1992) and experience with other cover designs (Albright et al. 2004), the Department has a reasonable assurance that a cover can be successfully constructed with saturated hydraulic conductivity values that meet the ground water protection strategy requirements (1×10^{-8} cm/s). Further, it is explicitly contemplated in UMTRCA that long-term stewardship, including monitoring and maintenance of the institutional and engineering controls, would be applied to the site to ensure long-term performance and protection of public health and the environment. Also see responses to comments #23 and #39.

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Document #574 Comment #54 Commentor: U.S. Environmental Protection Agency

Page S−47 Major Conclusions, fifth bullet: The way that this statement is worded suggests that the White Mesa Mill already has a cell constructed. While the IUC Corporation has received a permit for a cell suitable for disposal of the Moab tailings, a final cell design may require extensive modifications prior to attaining final approval. The overall impact of constructing the cell at White Mesa and all the ancillary facilities that will be required for the slurry pipeline, coupled with the inherent operational uncertainties of such an endeavor, need to be carefully considered and more thoroughly evaluated prior to selecting this alternative.

Response:

The statement has been reworded to more clearly identify that a disposal cell does not yet exist to accept the Moab tailings. The proposed action for the White Mesa Mill alternative is described in Section 2.2.5, and the associated impacts are addressed in Section 4.4. The treatment of this alternative presented in the EIS is adequate to support informed decision-making.

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Document #574 Comment #55 Commentor: U.S. Environmental Protection Agency

Page S−47 Major Conclusions, ninth bullet: EPA concurs with DOE that the "No Action" alternative poses the greatest risk to human health over the long term and exposures to the public at vicinity properties poses the greatest risk. DOE should go forward with clean-up of the vicinity properties at its earliest opportunity independent of any delays associated cap-in-place or moving the tailings to an off-site repository.

Response:

DOE acknowledges EPA's concurrence that the No Action alternative poses the greatest risk. DOE intends to initiate remedial actions at included vicinity properties following the Record of Decision.

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Document #574 Comment #56 Commentor: U.S. Environmental Protection Agency

Page 1−7, Off-Site Disposal Option: We suggest that DOE consider increasing its estimate from 11.9 million tons of contaminated material up to 13 million tons. This will provide a more conservative estimate for purposes of addressing overall costs and the transportation impacts associated with the various alternatives. This is also supported by recent DOE surveys which indicate the off-pile contamination has increased to more than 500,000 tons. It will also account for an increase in the depth of contamination beneath the pile based on similar DOE experience at other UMTRCA sites. The estimated depth of contamination beneath the pile of 2 feet is based on limited borehole data and may not include tailings placed in the hole that resulted from the excavation and construction of the berms that surrounded the original tailings impoundment.

Response:

See response to comment #44 regarding off-pile contamination and changes in DOE's estimates. The Department's review of the available data indicates that sub-pile soil contamination depth varies widely within a given UMTRCA site and between UMTRCA sites whose tailings have been relocated. The estimate for the Moab site was based on site-specific data. The EIS addresses the uncertainty regarding the quantity of the sub-pile soils (Section 2.6) as well as the impacts should this quantity be larger than assumed. In addition, the uncertainty of costs associated with additional remediation quantities is addressed in Section 2.7.3 through the addition of a 10-percent contingency on the total project estimate and the qualification that the budget estimate is expected to fall within the range of -15 percent to +30 percent. Therefore, the Department believes that the existing analysis is sufficient to support decision-making.

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Document #574 Comment #57 Commentor: U.S. Environmental Protection Agency

Page 1−8, White Mesa Mill: Perhaps DOE should remove the word likely in the statement that reads "…expansion of the existing facility would likely be necessary". Such a statement suggests that the disposal cell necessary for the Moab tailings alternative has already been constructed.

Response:

Section 1.4.2 of the EIS has been modified to address the comment.

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Document #574 Comment #58 Commentor: U.S. Environmental Protection Agency

Page 1−10, 4th paragraph, 2nd sentence: With all the unknowns surrounding the selection of an alternative, the transportation mode, and clean-up of the off-pile contamination, the statement that the ground water remediation system will be completed in 2009 or approximately 5 years after issuance of a ROD appears to be optimistic.

Response:

The schedule set forth in the EIS to complete "construction" of the ground water system within 5 years of the Record of Decision is based on several factors, including time to complete the surface remedial action plan and the ground water remedial action plan. As the text stipulates, completion of the ground water remedial action is expected to require 75 to 80 years. While this schedule is aggressive, DOE believes it is achievable and consistent with stakeholder comments to expedite the remediation schedule.

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Document #574 Comment #59 Commentor: U.S. Environmental Protection Agency

Page 2−9, Borrow Material Storage Area: EPA recognizes that this is only a conceptual plan: however; we would question the proposed size of the borrow storage area. Based on the sequencing proposed (i.e., radon barrier, sand and gravel, water storage layer and riprap would all need to be available on site to construct the side slopes), does DOE believe five acres would be a sufficient area based on the quantity of materials necessary to maintain a construction schedule and the size and mobility requirements of the tandem trucks that would be hauling the material to the site?

Response:

The commentor is correct in recognizing that this is only a conceptual plan. Due to the limited area available for material stockpiles, efforts would be made to minimize on-site borrow stockpile volumes by coordinating the supply of borrow materials with construction-handling capacity to maintain minimal inventories. The actual size of the borrow stockpile area would likely vary through time, but an estimate of 5 acres is reasonable at this phase of design.

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Document #574 Comment #60 Commentor: U.S. Environmental Protection Agency

Page 2−20, Section 2.1.3.1 Borrow Material Standards and Requirements, Riprap: Will 12-inch nominal riprap material be adequate to construct the riprap diversion wall necessary to protect the pile?

Response:

The descriptions of the conceptual cell cover and barrier wall design have been expanded in the EIS to state that riprap materials would be sized to withstand the maximum river forces recently identified by USGS. In addition, the barrier wall would be of sufficient length and robustness to mitigate against river encroachment.

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Document #574 Comment #61 Commentor: U.S. Environmental Protection Agency

Page 2−22 through 2−25, Section 2.1.3.2 Borrow Material Excavation and Transportation Options through Section 2.1.5.2 Equipment: EPA staff provided comments as part of the Cooperative Agency review on the preliminary Draft EIS document, that the number of truck trips, number of trucks, and the number of truck drivers necessary to move borrow materials for reclamation and/or cover materials to the site could not be verified based on the data provided in this section, the accompanying tables and subsequent sections in the EIS. Many of the problems addressed previously still remain in the present draft.

For example, page 2−22 item 4 indicates that approximately 5 trucks would be necessary to haul the borrow material, cover material, and radon barrier material to the site. Elsewhere, Table 2−2 indicates a total of 43 daily round trips are required for the movement of borrow material for the on-site alternative. Table 2−4 Average Annual Labor Requirements indicates that a total of 41 truck drivers are necessary and Table 2−5 indicates that the number of tandem trucks needed to haul borrow materials is 28. These tables and numbers do not appear to be consistent with those presented in Tables 2−16 through 2−21. It is difficult for DOE to establish the costs of the on-site alternative without using consistent sets of information to prepare the project cost estimates.

Response:

The text and table cited have been revised to be internally consistent. DOE acknowledges uncertainties associated with the truck transportation mode. DOE's cost estimates include contingencies. However, in DOE's opinion, the data in the EIS are sufficient to compare alternatives and the impacts associated with each.

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Document #574 Comment #62 Commentor: U.S. Environmental Protection Agency

Page 2−32, Figure 2−13 - Although this is only a schematic, one area proposed for tailings handling raises a potential concern. DOE proposes tailings handling and processing areas within the 100-year floodplain of Moab Wash and the Colorado River (See Appendix D, page D−2). Is it correct that these tailings handling areas will not be lined? The proposed storm control berms and the tailing processing area would be flooded in the 100-year event and perhaps even in a 50-year flood event.

Response:

For the EIS, it has been assumed that the tailings handling areas would not be lined. Final design decisions would not occur until after the Record of Decision; design details would then be addressed in a remedial action plan. In Section 4.1.5.1 of the EIS and in the Floodplain Statement of Findings (included in Appendix F), DOE acknowledges the potential for short-term impacts in the floodplain as a result of working in the floodplain during remediation. To minimize this potential, DOE would implement necessary mitigation (see Appendix F4.2). Section 2.1.1 has been revised to be consistent with F2.1.2 and to indicate that berms would be constructed to heights in excess of a 100-year flood event. Detailed operational controls would be included in the remedial action plan following the Record of Decision. Also see response to comment #24 regarding rerouting and enhancing Moab Wash.

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Document #574 Comment #63 Commentor: U.S. Environmental Protection Agency

Page 2−49, Figure 2−10 Summary Logistics for Rail Transportation: DOE has estimated there will be 2,188 truckloads of debris which would not be suitable for rail transport because of size constraints and the handling ability of the conveyor belt. Elsewhere in the Draft EIS, the same number of truckloads for transport of debris is used for an off-site alternative, despite the size requirements for transport of particles via the pipeline (i.e., material could not exceed .03 inches in diameter in order to be transported by slurry). What characterization studies have been conducted of the on-site and off-site vicinity property material to substantiate this estimate?

Response:

As currently envisioned, the conveyor system would not be capable of handling large oversized debris; these materials would be hauled to off-site disposal by truck. These estimates are based on available project information but do not include intrusive sampling into the tailings pile.

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Document #574 Comment #64 Commentor: U.S. Environmental Protection Agency

Page 2−51, Line 1 - question follows up on the comment pertaining to Figure 2−10 - DOE has estimated that approximately 35,000 yd^3 of oversize debris material would need to be hauled by truck to the Crescent Junction or Klondike Flats disposal site. Further on in Table 2−20, Average Annual Equipment Requirements - Rail Transportation Mode, and Table 2−21 Slurry Pipeline Transportation Mode DOE estimates that 2 to 5 tandem trucks would be required to haul the debris to the Crescent Junction or Klondike Flats sites. Elsewhere (and in a prior response to EPA comments) DOE indicated that debris would be hauled in 16-yd trucks. Please note that these tables need to be changed to reflect 16-yd capacity trucks as stated elsewhere in the document.

Response:

Debris could be potentially transported by either tandem trucks or by 16-yard trucks, as appropriate. However, as indicated on the tables, tandem trucks have been assumed to be used for debris haul.

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Document #574 Comment #65 Commentor: U.S. Environmental Protection Agency

Page 2−51, Conveyor System: If rail transportation is going to be successful, the conveyor system and loading facility (hopper at the load-out) will be key pieces of equipment. Assuming continuous operation and the throughput volume of material, the conveyor belt and hopper system will need to have a capacity of approximately 500 tons an hour to sustain a schedule of loading four (4) trains per day. To provide some certainty in the loading of a train, it may require that the hopper have the capacity to fill out a complete car set of 30 cars at 100 tons per car for 3000 tons per train. This information should be included in the Final EIS.

Response:

DOE acknowledges the commentor's concerns. In the remedial action plan, the information and recommendations provided in the comment and the level of detail that would need to be addressed would be key considerations.

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Document #574 Comment #66 Commentor: U.S. Environmental Protection Agency

Page 2−52, Klondike Flats Site Rail Construction and Reclamation and Figure 2−22 – The Final EIS should include the explanation that this is a conceptual plan and suggests one possible site configuration for providing access to the Klondike Flats site. Alternate access and egress sites are possible and will need to be evaluated carefully prior to settling upon a final design.

Response:

The text in Section 2.2.4.2 has been amended to reflect the conceptual nature of the configuration at both the Klondike Flats and Crescent Junction sites.

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Document #574 Comment #67 Commentor: U.S. Environmental Protection Agency

Page 2−77, Soil Rock Admixture Layer - This paragraph indicates that the maximum diameter of the riprap material would be 12 inches. However, the intended thickness of the rock admixture layer is only six inches. Although a nominal riprap of 12 inches may be appropriate and constructible for the side slopes over the buttress, it may not be readily constructible over the cover, nor is it desirable as part of the water storage component of the cover.

Response:

The cover design as stated in the EIS is conceptual for purposes of evaluating alternatives. Details of the actual design would be developed after the Record of Decision.

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Document #574 Comment #68 Commentor: U.S. Environmental Protection Agency

Page 2−82 Table 2−17, Average Annual Labor Requirements - Rail Transportation Under the heading 'Transportation Labor', please re-evaluate the need for 3 to 6 truck drivers to haul debris or oversize material. Based on DOE's estimates of the volume of debris that would need to be hauled by truck to the Klondike Flats and Crescent Junction sites, this number of truck drivers appears to be high. However, this number may be appropriate for the White Mesa alternative site because of the time needed to complete each round trip for this significantly longer haul distance.

Response:

DOE acknowledges the commentor's concerns. DOE would evaluate and determine the number of drivers needed in the development of the remedial action plan.

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Document #574 Comment #69 Commentor: U.S. Environmental Protection Agency

Page 2−83, Table 2−16, Table 2−17 and Table 2−8 Average Labor Requirements - Slurry Pipeline Transportation: Why will there be a need to increase the Construction Labor Site Support staff under the double-shift scenario for truck or rail haul? This does not seem appropriate for the slurry pipeline alternative since this is presumed to be a continuous 24-hour daily operation. The text and footnotes for these tables should indicate these dual numbers to indicate the difference for a single shift versus the double shift. Wouldn't site support at Moab need to increase by 67 percent in the two ten-hour shift scenario? This increase in labor for site support is not reflected in the tables.

Response:

If a second work shift were added, a proportional amount of labor would be required to support the increased activity. The slurry operation would be a 24-hour operation, but the activities associated with site excavation to get the material to the slurry pre-treatment plant would not, and hence would not require an increase in labor for that portion of the work. The text and footnote indicate increases where it is appropriate for the activity. Site support would increase by 67 percent, as stated in Section 2.2.7.1.

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Document #574 Comment #70 Commentor: U.S. Environmental Protection Agency

Page 2−88, Table 2−23, Estimated Annual Fuel Consumption The Final EIS should provide greater detail on the consumption of fuel. This section on fuel consumption is not yet fully supported and rather abbreviated. Figure 2−51 on page 2−127 indicates the comparison of fuel consumption by alternative disposal site and transport modes. The information on this figure should be converted into a table and should replace the existing table on page 2−88.

Response:

Table 2−23 states that the fuel consumption volumes are estimates only. DOE concurs with the commentor that this section is abbreviated. However, DOE believes these estimates are sufficient for assessing impacts and evaluating differences among the alternatives analyzed in the EIS.
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Document #574 Comment #71 Commentor: U.S. Environmental Protection Agency

Section 2.3.2.4. Active Remediation Operations, page 2−107 Table 2−31. This table indicates that remediation target goals will be achieved by the on-site alternative after 80 years of operation of the ground water remedy. This appears to be unlikely, given the certainty that the tailings pile will continue to serve as a source of contamination for hundreds to thousands of years. This issue is discussed in some portions of the EIS (e.g., Page 2−109), but it is not fully considered in the discussions regarding the on-site, cap-in-place alternative.

Response:

Section 2.3.2 references the SOWP as the source document for the Department's predictions, which presents the technical basis in greater detail than was appropriate for discussion in the EIS. The prediction was based on site-specific characterization of the tailings source term and the calibrated flow and transport model under the presumption that the tailings remain a perpetual source of contaminant loading to the ground water system. In addition, the uncertainty associated with the prediction is discussed in Section 2.6. See also response to comment #34.
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Document #574 Comment #72 Commentor: U.S. Environmental Protection Agency

Page 2−125, Visual Resources - There will be strong visual contrasts at the Moab site during the five-year to ten-year construction period for either an on-site or off-site disposal alternative. However, it is not clear why the on-site alternative would have strong adverse impacts to visual resources during the long term. If the existing pile creates a "moderate" contrast as stated in the Draft EIS, then it is very likely that the final pile after 10 or 15 years would also result in being considered a "moderate" contrast. The present emphasis suggests that the contrast following construction of the cap in place would be a 'strong visual contrast.' This degree of visual contrast will be dependent upon the slope of the pile, and the materials utilized (i.e., soils, riprap and vegetation). The Final EIS for this section should include the mitigation measures as addressed in Section 4 regarding reducing the visual contrast.

Response:

The referenced text states that: "Under the on-site disposal alternative, adverse impacts to visual resources would occur during the short and long terms. Contrasts between the surrounding natural landscape and the newly constructed disposal cell would be strong and would attract the attention of casual observers. Although these contrasts would lessen slightly over time...." Section 4.1.11.1 states that the final disposal cell would have a moderate contrast with the surrounding landscape in the long term. The commentor is correct that this would not be significantly different from the current moderate contrast.

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Document #574 Comment #73 Commentor: U.S. Environmental Protection Agency

Page 2−166, Table 2−33 - Consequences of Uncertainty, Item 1 - Ground Water and Site Conceptual Model Assumptions: EPA technical and professional staff concur that there are tremendous uncertainties associated with the ground water and site conceptual models. However, DOE's assessment that without catastrophic events surface water quality would be sustained for 1000 years cannot be assured. This is because the non-catastrophic events also significantly impact surface and ground water in the relatively short term. For example, what are the impacts for the proposed the cover on the tailings pile if it cannot achieve a saturated hydraulic conductivity flux rate of 10^{-8} cm/s?

Response:

The impacts of using an erroneous value for the ground water transport or flow input parameters are described in the EIS (Table S−1 and 2−33). As stated in the EIS, if a saturated hydraulic conductivity of 1×10^{-8} cm/s cannot be met for the on-site disposal alternative cover, then the proposed ground water concentration goal of 3 mg/L ammonia cannot be achieved. Details of the uncertainties are provided in the prediction uncertainty analysis (Section 7 in the SOWP). The degree of impact can be assessed by examining the worst-case scenario. For example, the No Action disposal alternative cover with a saturated hydraulic conductivity of 1×10^{-7} cm/s indicates that a maximum ground water concentration of approximately 6 mg/L ammonia would be achieved after 75 years. This concentration is twice as high as the ground water goal of 3 mg/L ammonia achievable for the on-site disposal alternative cover. However, it is unlikely that the saturated hydraulic conductivity for the on-site disposal alternative cover would degrade to the degree of the No Action cover. Therefore, the resulting impact would result in ground water concentrations greater than 3 mg/L but less than 6 mg/L.

However, based on technical literature (Howell and Shackelford 1997; Estronell and Daniel 1992) and experience with other cover designs (Albright et al. 2004), the Department has a reasonable assurance that a cover can be successfully constructed with saturated hydraulic conductivity values that meet the ground water protection strategy requirements (1×10^{-8} cm/s). Further, it is explicitly contemplated in UMTRCA that long-term stewardship, including monitoring and maintenance of the institutional and engineering controls, would be applied to the site to ensure long-term performance and protection of public health and the environment.
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Document #574 Comment #74 Commentor: U.S. Environmental Protection Agency

Secondly, we suggest that the 100-year flood should be categorized as a 'catastrophic event.' Based on the recent historical record, there have been at least four such flood events since the 1880's. Such flood events will inundate the toe of the tailings pile and depending on the duration of the flooding, may reintroduce additional contaminants into the ground water plume.

Response:

See response to comment #24. The term "catastrophic" is admittedly subjective and less precise than "100-year" or "500-year" flood, which can be documented by historic or geologic records. Based on DOE's analyses and the velocities projected in the recent USGS report, while additional contaminants would be expected to leach from the pile over time, neither the 100- nor the 500-year flood would have catastrophic effects on the pile.

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Document #574 Comment #75 Commentor: U.S. Environmental Protection Agency

Page 2−167, Table 2−33 Consequences of Uncertainty, Item 2 - Tailings Characteristics (Nonradiation): We concur with the observation regarding uncertainties for average moisture content; however, the Final EIS information should include a discussion of the uncertainties associated with the process of pressing and drying of tailings to meet optimal moisture content for placement and compaction. Once placed into a cell, even if placed at optimal moisture content, transient drainage will continue for perhaps 25 years and if the tailings were to be placed at conditions above the optimal moisture content, then transient drainage from such tailings may extend for longer periods of time. The Mancos Shale beneath the Klondike and Crescent Junction provides much greater protection to surface and ground water than does the White Mesa site. DOE has estimated that the Klondike site and Crescent Junction site would provide ground water protection for upwards of 25,000 years. At the White Mesa site, it is estimated that ground water travel time to points of exposure at surface springs is estimated to be within 3,600 hundred years. A possible discharge point is Ruin Spring located about 2 miles south-southwest of the White Mesa Mill.

Response:

As stated in Table 2−33, the uncertainty regarding tailings moisture content would affect the time required for drying and obtaining optimum moisture content for emplacement. However, the fate of the transient drainage fluids is not relevant for the Klondike Flats and Crescent Junction sites given the high degree of geologic isolation offered by these sites. The potential settlement of the pile due to volume changes from the drainage is not anticipated to be sufficient to compromise the long-term cover performance. DOE concurs that initial research shows the Klondike Flats and Crescent Junction sites would be more protective of ground water than the White Mesa Mill site, as stated in the EIS. The EIS shows a potential for ground water to reach points of exposure at the White Mesa Mill site within 3,600 years, and DOE will consider this in its decision-making process.

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Document #574 Comment #76 Commentor: U.S. Environmental Protection Agency

Page 2−175, Table 2−33 Consequences of Uncertainty, Item 18 - Salt Layer Migration: DOE acknowledges the possibility that a salt layer exists at some depth in the pile. Modeling has indicated that the layer could reach the ground water in approximately 1,100 years and could continue to impact ground and surface water for 440 years. When these numbers were projected, the saturated hydraulic conductivities and flux were assumed to be 10^{-8} cm/s. What would be the time frame if the saturated hydraulic conductivities and or flux into the tailings were 10^{-6} cm/s? This uncertainty should be discussed and addressed in the Final EIS.

Response:

The time frame for a saturated hydraulic conductivity value greater than 1×10^{-8} cm/s can be assessed by examining the No Action disposal alternative. For example, the No Action disposal alternative cover with a saturated hydraulic conductivity of 1×10^{-7} cm/s indicates that the breakthrough time for the ammonia from the salt layer to first exit the base of the tailings is approximately 168 years and would continue for approximately 49 years. It is unreasonable, for purposes of comparing alternatives in the EIS, to consider a saturated hydraulic conductivity of 1×10^{-6} cm/s, which is greater than the No Action disposal cover (the worst-case scenario).

Details of the uncertainties are provided in the prediction uncertainty analysis (Section 7 of the SOWP) and are discussed in the EIS (Table S−1 and 2−33). As stated in the EIS, if a saturated hydraulic conductivity of 1×10^{-8} cm/s cannot be met for the on-site disposal alternative cover, then the proposed ground water concentration goal of 3 mg/L ammonia cannot be achieved.

However, based on technical literature (Howell and Shackelford 1997; Estronell and Daniel 1992) and experience with other cover designs (Albright et al. 2004), the Department has a reasonable assurance that a cover can be successfully constructed with saturated hydraulic conductivity values that meet the ground water protection strategy requirements (1×10^{-8} cm/s). Further, it is explicitly contemplated in UMTRCA that long-term stewardship, including monitoring and maintenance of the institutional and engineering controls, would be applied to the site to ensure long-term performance and protection of public health and the environment. Also see responses to comments #23, #39, #45, and #73.

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Document #574 Comment #77 Commentor: U.S. Environmental Protection Agency

Page 2−175, Table 2−33, Consequences of Uncertainty, and Item 19 Use of Tandem Trucks: The EIS notes that for the tailings haul, there is a question whether permissions from UDOT will be obtained to allow the use of tandem trucks. However, will sand and gravel, riprap and other required reclamation materials for the cap-in-place necessarily be delivered via tandem truck? DOE needs to address these different and uncertain methods of truck hauling into the Final EIS regarding the transport of riprap, borrow material, and sand and gravel. It appears that utilizing trucks that contractors currently have available would be more likely. Recognizing these specific uncertainties will also be consistent with the assumptions utilized in the NRC's EIS regarding this matter.

Response:

DOE will consider these uncertainties in weighing the alternatives. In developing the remedial action plan for actions involving truck transport, DOE would determine which trucks should be used for borrow materials. Factors that would be considered include regulatory constraints (e.g., UDOT approval), project transportation needs, and safety.

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Document #574 Comment #78 Commentor: U.S. Environmental Protection Agency

Page 3−9, Millsite Contamination. Please see previous comment regarding the volume of tailings. To properly clarify the range of the expected volume of material, we suggest that the volume of contamination for purposes of projecting impacts use an estimate of 13 million tons. As stated previously, this is probably more realistic based on the recently increased estimates of off-pile contamination and the relatively paucity of data available regarding the depth of contamination under the pile.

Response:

See comment #44 regarding changes to off-pile contaminated soil estimates. The EIS addresses the uncertainty regarding the quantity of the remediated materials in Section 2.6 as well as the impacts should this quantity be larger than assumed. In addition, the uncertainty of costs associated with additional remediation quantities are addressed in Section 2.7.3 through the addition of a 10-percent contingency on the total project estimate and the qualification that the budget estimate is expected to fall within the range of -15 percent to +30 percent. Therefore, the Department believes that the existing analysis is sufficient to support decision-making.

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Document #574 Comment #79 Commentor: U.S. Environmental Protection Agency

Page 3−11, Section 3.1.3.1 Mill site Contamination. The range, as well as average concentrations of contaminants, should be given.

Response:

The requested data are available in the SOWP as cited in the EIS. DOE does not believe this level of detail is needed in the EIS.

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Document #574 Comment #80 Commentor: U.S. Environmental Protection Agency

Page 3−61, Section 3.1.15 Visual Resources: Please clarify whether the BLM presently characterizes the Moab site as Class II, or does the pile already cause the site to be classified as Class III? Why do the existing conditions in the Spanish Valley with its residential and commercial development aspects, meet a Class II objective? Recognizing that the valley is presently a Class III visual resource is important for identifying impacts of various alternatives in subsequent impact analysis.

Response:

BLM typically does not classify visual resources on lands that are not managed by BLM. The text states that "BLM classifies the area surrounding the Moab site as Class II...." Section 3.1.15 has been clarified to state "BLM classifies BLM-managed lands surrounding the Moab site as Class II." DOE's Moab site and the residential and commercial portions of the Spanish Valley have no visual classification. As stated in Section 4.1.11.5, the BLM visual classification system was used because it provides a useful way to measure the effects of a proposed action on visual resources.

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Document #574 Comment #81 Commentor: U.S. Environmental Protection Agency

Page 3−58, line 64 and 65 - DOE makes reference to the day/night dBA-weighted sound level which uses a ten-fold or ten-decibel penalty, for night time sound. The Final EIS should more thoroughly address the night time and potentially sleep-disruptive noise impacts for the community residents along the White Mesa truck haul route, particularly for the double shift haul method.

Response:

Section 4.4.10 describes the noise increase under the White Mesa Mill disposal alternative using trucks as the mode of transportation. The night-time impact is mentioned in Section 4.4.10.5. The average noise levels and region of influence are quantified in Table 4−45.

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Document #574 Comment #82 Commentor: U.S. Environmental Protection Agency

Page 3−65, Figure 3−21 Transportation Routes and Selected Roads in the Moab to Crescent Junction Area The Final EIS should provide an estimate of traffic into Arches National Park to complete the picture of vehicle traffic in the vicinity of the site. The National Park may have suitably reliable traffic information which can be used to improve the accuracy of the traffic data and Figure 3−21 for this section of US 191. DOE may wish to verify counts, including turning movements along this section of highway, as these conditions must be considered to address the traffic conditions related to truck-haul of the tailings to either Klondike Flats or Crescent Junction sites.

Response:

The traffic impact analysis in the EIS uses segmented state data which do characterize the highway section that includes the entrance to Arches National Park. DOE will consider traffic conditions in its decision-making process.

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Document #574 Comment #83 Commentor: U.S. Environmental Protection Agency

Section 4.1.3.1.Groundwater, page 4−6, Construction and Operations Impacts at the Moab Site. This section specifically states that the "available information is insufficient to reliably estimate the inventory of soluble mineral salts in the tailings, estimate the time for the salts to be completely depleted, or predict the future geochemical transformations that may occur." However, this seems to be ignored in other sections when discussing the anticipated time frame needed for groundwater remediation in the on-site alternatives.

Response:

Based on calculations, DOE estimates that the leaching effects of an ammonia salt layer found in the upper 10 feet of the tailings pile would not be observed at the underlying water table for about 1,100 years. As discussed in the SOWP (Section 6), attenuation processes (i.e., biological degradation, sorption, etc.) make it likely that ammonia concentrations in the tailings fluid near the base of the pile would be considerably less. In addition, since the salt layer is found in the upper 10 feet of the pile, it may also be possible to mitigate the salt layer by excavation and aboveground treatment prior to placing the cap. Section 4.7.3 has been revised to include this potential mitigative measure for the salt layer. The consequence of using an erroneous value for the ground water transport or flow input parameters is described in the EIS (Tables S−1 and 2−33).

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Document #574 Comment #84 Commentor: U.S. Environmental Protection Agency

Section 4.1.4.1 Surface Water, page 4−11, Construction and Operation Impacts at the Moab Site. In the third paragraph of this section, we suggest the sentence: "Surface water concentrations should decrease as well." be deleted based upon our above concerns.

Response:

See response to comment #83 regarding the potential contribution from the ammonia salt layer. Because ground water contamination is the primary source of surface water contamination, a decrease in ground water contamination is expected to lead to a subsequent decrease in surface water contamination.

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Document #574 Comment #85 Commentor: U.S. Environmental Protection Agency

Page 4−12, Section 4.1.4.2 - Impacts from Characterization and Remediation of Vicinity Properties Because human health risks at the vicinity properties is the greatest immediate risks, we are pleased to understand that DOE will begin the remediation of the vicinity properties upon issuance of the ROD.

Response:

DOE acknowledges EPA's concurrence that the No Action alternative poses the greatest risk. DOE intends to initiate remedial actions at included vicinity properties following the Record of Decision.

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Document #574 Comment #86 Commentor: U.S. Environmental Protection Agency

Page 4−30, Section 4.1.11: DOE has responded adequately to most of EPA's comments regarding visual resources. However, EPA believes that this section should include the statement that "based on the assumption that the BLM Class II objective is not presently met at the Moab site". As stated previously (comments on the preliminary draft) the visual impacts (i.e., strong contrast) would be evident during the major construction phases associated with on-site construction. EPA would agree that strong contrasts would continue for a relatively short period of time (perhaps 3 to 10 years) after remediation was completed and until vegetation was re-established on the side slopes. EPA agrees that overall, a moderate contrast with the surrounding landscape would be expected. Re-contouring of the pile to make it a positive drainage pile may allow DOE to decrease the slopes on the north and east side of the pile and using reddish sandstone and a red-textured soil could further mitigate these visual contrast concerns.

Response:

DOE did not include a statement such as "based on the assumption that the BLM Class II objective is not presently met at the Moab site" in the EIS because the BLM Class II designation of the area surrounding the Moab site is not applicable to the Moab site itself. As stated in Section 4.1.11.5, the BLM visual classification system was used simply because it provides a useful way to measure the effects of a proposed action on visual resources. Mitigation of visual impacts is included in Section 4.7.9 and would be examined further if the on-site disposal alternative were selected.

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Document #574 Comment #87 Commentor: U.S. Environmental Protection Agency

Page 4−43 (Section 4.1.15.1): The document states that the concentration of radon at the Maximally Exposed Individual is 1.9 pCi/l. Is this an indoor or outdoor sample? If it is indoor, this is the average concentration in a home. If this is an outdoor reading, this concentration combined with seepage into the structure from the local terrain could result in the structure exceeding the 40 CFR 192.12(b)(1) 0.02 WL or 0.03 WL standards. Please specify the location of the sample in the Final EIS.

Response:

The radon concentration of 1.9 pCi/L was the average of outdoor samples taken from the second quarter of 2002 through the first quarter of 2003 at the caretaker's housing at Tex's River Tours. The measurements were made using track-etch type alpha detectors that are exposed for 3 months prior to analysis. In addition, this location is not a vicinity property to which the standard in 40 CFR 192.12(b)(1) would apply. Rather, after remediation of the Moab site, the standard in 40 CFR 192.02(b)(2), 0.5 pCi/L, would apply at this location.

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Document #574 Comment #88 Commentor: U.S. Environmental Protection Agency

Page 4−44, (Section 4.1.15.2): The section states that the EPA remediation standard for vicinity properties is 0.02 WL (or about 3 pCi/l). The actual EPA standard is that the responsible party must make a reasonable effort not to exceed an annual average of 0.02 WL, and in any case, not exceed 0.03 WL (see 40 CFR 192.12(b)(1)). Also, EPA assumes an ER of 0.5 in residential homes, which means that 0.02 WL is about 4pCi/l, and not 3 pCi/l as stated in the DOE's Draft DEIS. The way the paragraph is structured, it implies that the risks stated are EPA conclusions. The Final EIS should clarify that these numbers are not exactly consistent with EPA's risk assessments pursuant to 40 CFR 192 or these estimates of risk should be changed to the risk levels as specifically discussed in the 40 CFR 192 EIS. See the discussion on Appendix D that follows.

Response:

DOE based the impacts analysis on the 0.02 WL standard because in most cases this level of remediation could be achieved using relatively low-cost methods.

The value of 3 pCi/L was based on an equilibrium ratio of 0.7. However, the radiation risks described in the EIS are based on the WL values, not on the calculated value of 3 pCi/L, which was provided for illustrative purposes. For perspective, indoor equilibrium values typically range from 0.2 to 0.7.

The methods and data used to estimate impacts in the Moab EIS and the Final Environmental Impact Statement for Remedial Action Standards for Inactive Uranium Processing Sites (40 CFR 192) are generally consistent. However, as required under NEPA, in some instances more current data were used to estimate impacts in the Moab EIS, rather than using the data used to estimate impacts in the Final Environmental Impact Statement for Remedial Action Standards for Inactive Uranium Processing Sites (40 CFR 192).

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Document #574 Comment #89 Commentor: U.S. Environmental Protection Agency

Page 4−48, (Table 4−14): The risk assessment should include a guide and local rafter which have potentially longer exposure times than this camper-assumption procedure. See the discussion on Appendix D that follows.

Response:

Appendix D does cover these two scenarios for potential exposure to contaminated soils and ground water (at the point of release to surface water) for campers and rafters who conduct these activities on the site. The major assumptions and results for these two scenarios are presented in Tables D−6 through D−9. In both scenarios, the tables list the exposure frequency as 1 because of the uncertainty associated with this site-specific exposure assumption. As explained in these tables and elsewhere in the text, this was done to allow more flexibility in evaluating these scenarios and to address the uncertainty associated with exposure frequency. As noted in the text, the exposure frequency is proportional to the results. For example, for incidental ingestion of soil during camping, the total Hazard Quotient (also known as the hazard index or HI) for chemicals as noncarcinogens is 8.21×10^{-3} for the reasonable maximum exposure (RME) case (see Table D−6). Using the EPA screening benchmark of 1 for the HI, the exposure frequency would need to be 122 days of on-site camping to exceed this benchmark for these conditions. This would need to be done for all routes of exposure (soil and ground water) separately for noncarcinogens and carcinogens. Doing this same analysis for carcinogens using the benchmark of 1×10^{-4} to 1×10^{-6} would yield an exposure frequency of 39 to 3,900 days per year of on-site exposure. The risk driver in this type of evaluation is the RME for children ingesting contaminated ground water where the exposure frequency approaches 2 days per year of on-site camping (approximately 5 days per year for the central tendency). The evaluation in Appendix D was done in this manner to highlight the importance and uncertainty of exposure frequency in these calculations and to provide more insight to members of the public and decision-makers for evaluating risks.

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Document #574 Comment #90 Commentor: U.S. Environmental Protection Agency

Page 4−54 & 55, (Section 4.1.17): The impacts predicted by the model for cell failure due to natural phenomenon, appears to result in excessive risks and the assumptions used are not clear. For example, the document provides the volume of the tailings in tons and claims that 25% of this volume is pore water. It is not clear how to calculate the volume of pore water to understand if the model predictions remain plausible. To check the predictions, EPA staff used information obtained from the Moab Project Site Groundwater Subcommittee Minutes, July 12, 2002, which states that the pile initially contained 15 million gallons of leachate (Minutes at page 7.) Given that the assumptions used that the erosion of the pile could occur over a 10-hour period and assuming all the pore water escapes, the pore water flow rate would be 56 cubic feet cfs. The model assumed this river flow during such a failure event would be 150,000 cfs. It is not clear how mixing a 56 cfs fluid at 6.63 mg/L uranium with 150,000 cubic feet per second (cfs) river flow at background concentration of about 0.008 mg/L uranium, would result in a final mixture of 1 mg/L uranium at a 20% release or 4 mg/L at an 80% release. We understand there would be some leaching of uranium from the solids within the pile, but given the short time of this rapid event and the volume of river water that would be exposed to the tailings, this contribution would seem to be negligible compared to the pore water.

Similar inconsistencies appear to exist for the estimated concentrations shown in Tables 4−18 and 4−19. The contamination levels are a few thousand pCi/g, yet the average Ra-226 concentration is 516 pCi/g in the pile. Based on the data provide in the 40 CFR 192 EIS, uranium mill slimes have about twice the Ra-226 concentration as sands (pg 18), so it is not clear how such significantly higher Ra-226 concentrations at 3,776 pCi/g would exist.

Response:

Even though the probability of a catastrophic pile failure is highly unlikely, the purpose of this calculation was to show what could potentially occur if the tailings pile failed from a catastrophic flood to support decision-making among alternatives. This calculation was based on a series of highly uncertain assumptions. It is intended to be a screening-level calculation that depicts a reasonable worst-case scenario. Therefore, incorporating the suggestions presented would be inconsistent with the intent of the analysis.

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Document #574 Comment #91 Commentor: U.S. Environmental Protection Agency

Page 4−87, 4.2.14 Socioeconomics: This section and the section which addresses socioeconomics for the Crescent Junction site need to reflect that the economic benefits of this project are short-lived and many of the economic benefits that DOE projects, (e.g., annual expenditures and labor earnings) will occur outside the two county region extending into Carbon and Emery Counties in Utah and Mesa County in Colorado. In particular, DOE must address either in section 4.2.14 Socioeconomic analysis for Klondike and 4.3.14 Socioeconomic analysis for Crescent Junction or in Table 2−33 Consequences of Uncertainty that should the alternative selected be an off site alternative north of Moab, a significant portion of the potential socioeconomic impacts (i.e., employment multipliers) may shift to Carbon and Emery Counties and Mesa County, Colorado.

Response:

Table 2−32 and Sections 4.2.14 and 4.3.14 have been clarified to indicate the larger potential area of socioeconomic impacts identified by the commentor.

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Document #574 Comment #92 Commentor: U.S. Environmental Protection Agency

Page 7−5, (Section 7.1.11): This seems to indicate that NESHAP requirements do not apply during active remediation. The section states that 40 CFR 61 Subpart Q applies only after final disposal and that NESHAP requirements do not apply during periods of active remediation. Subpart Q regarding designation of facilities lists which facilities need to apply Subpart Q and since this is a Title I site under UMTCA, 40 CFR 61.190, this subpart does not apply. However, Subpart T of NESHAP requirements would be applicable two years after the site has become inactive (See 40 CFR 61.220 and 61.222 (b)). (The Moab Uranium Mill tailings pile has been inactive and under DOE's authority for longer than two years.) The Subpart T rule states that such tailings piles are required to meet the 20 pCi/m_2-s Rn-222 flux standard unless a compliance agreement is reached because it is not physically possible for the owner or operator to complete disposal within the two-year time frame. DOE's preparation of the Final EIS and the eventual ROD would satisfy the latter condition. It should also be mentioned in this paragraph that DOE is presently following the radon guidelines in DOE Order 5400.5 as described in the Moab Annual Site Environmental Report (DOE-EM/GJ677-2004).

Response:

DOE concurs with the commentor that 40 CFR 61 Subpart Q does not apply to the Moab tailings. Because the Moab tailings are regulated under Title I of UMTRCA, Section 7.1.11 has been revised to reflect that the requirements of 40 CFR 61 Subpart T would apply to the final disposal site after long-term stabilization of the final disposal site has been completed as described at 40 CFR 61.223(e). DOE acknowledges EPA's characterization of the 40 CFR 61, Subpart Q and Subpart T regulations and agrees that the final EIS and eventual Record of Decision should satisfy both EPA and DOE requirements with respect to compliance with 40 CFR 61, Subpart T regulations.

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Document #574 Comment #93 Commentor: U.S. Environmental Protection Agency

Page A1−2 Figure A1−2 Typical Cross Section of the Disposal Cell, On-Site Disposal Alternative. The proposed figure illustrates a water storage cover and suggests a capillary break design of 6 inches. Will a 6-inch thick capillary break over the aerial extent of the pile (i.e., 130 plus acres) be sufficient? Does DOE feel confident that pile subsidence (differential settlement resulting from dewatering activities) and regional subsidence within the Moab Valley (due to salt dissolution) is likely to be evenly distributed to maintain the integrity of a 6-inch capillary break layer over the 200 to 1000-year life of the pile as required under 40 CFR 192?

Response:

Figure A1−2 is the same as Figure 2−6 in the EIS. It was placed in Appendix A1 (Biological Assessment) to minimize reference to the EIS. Section 2.1.1.3 of the EIS, which includes Figure 2−6, states that the design is conceptual for comparing impacts. During the post-Record of Decision preparation of the site-specific remedial action plan, a detailed design would be completed that would be specific for the selected alternative. The final design would address all concerns (including subsidence), would be in compliance with 40 CFR 192, and would be required to receive NRC's concurrence.

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Document #574 Comment #94 Commentor: U.S. Environmental Protection Agency

Page A1−7 Last Paragraph. DOE indicates that it would remove tamarisk trees and replace that vegetation with native riparian species that would be of "higher functional value for wildlife." In view of the USGS sediment transport modeling results, what species would be planted to provide greater bank stability? Is it likely that a native species, such as southwestern willow, can out-compete the tamarisk even after tamarisk removal? What measures will DOE take to minimize disturbance of vegetated areas at the Moab site during remediation efforts for either the on-site or off-site alternatives?

Response:

Section 2.1.1.4 and Appendix A1−4.1 state that native species would be planted, with an emphasis on species that would minimize encroachment of non-native species (e.g. tamarisk). Species composition would be determined in consultation with cooperating agencies as part of the remedial action plan. Willow is one of several species being targeted as part of the revegetation effort.

With regard to the second concern, DOE would remove all vegetation necessary to remove contaminated soils and materials. However, it is anticipated that some vegetation would remain in place. Wherever vegetation has been removed, storm water controls would be implemented to minimize the potential for runoff into the Colorado River, as stated in Section 2.1.1.1 of the EIS.

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Document #574 Comment #95 Commentor: U.S. Environmental Protection Agency

Page B−5, B4.0: DOE should consider conducting further evaluation of the proposed cover at White Mesa based on experience gained in its long-term surveillance and maintenance responsibilities for the UMTRCA Title I sites, as well as the recent design and construction of the Monticello Mill Tailings site. In the document, DOE noted that the NRC had approved the cell designs. However, NRC had previously approved the cell design at Moab and later required that the Atlas Corporation submit a revised closure plan. If a decision is made to relocate the tailings to White Mesa, specifically, what studies will DOE conduct to make certain that the proposed cover at White Mesa is acceptable? These would need to be addressed in the Final EIS.

Response:

The cover designs characterized and evaluated in the EIS are conceptual designs based on DOE's 20+ years of experience at UMTRCA sites and are considered adequate for the purpose of supporting the impact assessments of the EIS. Some examples of UMTRCA sites where DOE has completed remedial actions are three sites in Colorado (Grand Junction, Rifle, and Gunnison) and one site in Utah (Green River). The level of detail suggested by the commentor is typically not presented until after the Record of Decision in the remedial action plan, as stated in Section 2.1.1.3 of the EIS.

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Document #574 Comment #96 Commentor: U.S. Environmental Protection Agency

Appendix D, Human Health

We recommend that a revised Appendix D address a rafter guide and a frequent local rafter that may recreate on the river below the site to address potential human health risk scenarios.

Response:

See response to comment #89.

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Document #574 Comment #97 Commentor: U.S. Environmental Protection Agency

Radium in soils: When establishing the Health and Environmental Protection Standards for Uranium and Thorium Mill tailings (40 CFR 192), the primary Contaminant of Concern (COC) was identified as radon gas produced from the decay product of Ra-226. EPA's 40 CFR 192 EIS evaluated the risk for multiple alternatives including the "no action" alternative and the standards presently applicable to the Moab Uranium Mill Tailings. The results based on using the 40 CFR 192 EIS risk assessment method and that shown by DOE for the Moab tailings risk assessment are significantly different. For example, in Section D3.4 of the Appendix it is assumed that after the site has been remediated, clean surface soils are imported and there are no longer risks from either radon or gamma exposure. If the DOE were to excavate all soils down to background conditions for the primary COC, the additional risk to an on-site resident would be zero as stated in Table D−12 for an adult and stated in Table D−13 for a child. If the DOE plans to use the 5−15 Pico-Curies per gram (pCi/g) limit established in 40 CFR 192.12, then the residential risk could be 2 in 100 (40 CFR 192 EIS; Table 7−2, pg 110 alternative L2). The reason the risk exceeds the 10^{-4} risk limit is that Ra-226 is prevalent in uncontaminated soils, hence EPA established a standard near background as opposed to the conventional 10^{-6} to 10^{-4} range. To illustrate this, the 5−15 pCi/g standard is designed to bring the average concentration value below a residential structure down to 5 pCi/g. Assuming linear behavior, to reduce the risk from 2 in 100 down to 10^{-4}, the average value for radium would have to be as low as 0.025 pCi/g. But noting that the average background concentration of Ra-226 throughout the Colorado Plateau is about 2 pCi/g, establishing a risk based standard would result in a cleanup level 80 times less than background.

Response:

A section has been added to Appendix D that discusses 40 CFR 192 and the Final Environmental Impact Statement for Remedial Action Standards for Inactive Uranium Processing Sites (40 CFR 192). The risks from Ra-226 in soils are included in the discussion.

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Document #574 Comment #98 Commentor: U.S. Environmental Protection Agency

For the capped pile, Appendix D should note that the 20 pCi/m2-s standard is considered protective for all but the residential alternative (40 CFR 192 EIS, pg 119).

Response:

A section has been added to Appendix D that discusses 40 CFR 192 and the Final Environmental Impact Statement for Remedial Action Standards for Inactive Uranium Processing Sites (40 CFR 192). This aspect is included in the discussion.

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Document #574 Comment #99 Commentor: U.S. Environmental Protection Agency

The Appendix should summarize the 40 CFR 192 EIS risk conclusions and simply reference EPA's 40 CFR 192 EIS. For the no-action alternative, the appendix should use the 'rule-of-thumb' contained in the 40 CFR 192 EIS:

5pCi/g average below a structure (the 5−15 standard) = 0.02 WL in a structure equals 2 in100 risk

Response:

The methods and data used to estimate impacts in the Moab EIS and the Final Environmental Impact Statement for Remedial Action Standards for Inactive Uranium Processing Sites (40 CFR 192) were generally consistent. However, as required under NEPA, in some instances more current data were used to estimate impacts in the Moab EIS, rather than using the data used to estimate impacts in the Final Environmental Impact Statement for Remedial Action Standards for Inactive Uranium Processing Sites (40 CFR 192). Therefore, this "rule of thumb" was not used in the Moab EIS.

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Document #574 Comment #100 Commentor: U.S. Environmental Protection Agency

Contaminated surface waters: The analysis contained in this appendix only considers water ingestion in the camping scenario. Two other likely exposure scenarios should be addressed for completeness. As mentioned on page 23 of The National Academy of Science report of June 11, 2002, rafting guides are likely to have the highest exposure risk for publicly accessed areas. In addition to the guide, a local recreational frequent rafter could also receive a significantly higher exposure than a camper.

For the guide, we can assume this person:

Works 5 days per week for 5 months per year for 6 years (for example, a college student working part time); Takes two trips per day; and Swallows 1 Tablespoon (14.8 ml) of contaminated water per trip.

This would result in the consumption of 17.8 liters of contaminated water. In the camping scenario, the DOE assumed 2 liters consumed for one day resulted in a 10^{-7} risk. So using the conservative values above, a guide consuming about 10 times the water of a camper would be exposed at the 10^{-6} risk range. For a local and frequent resident rafter, we can assume one (1) trip per week for 5 months, over 30 years. Assuming the same ingestion rate, 8.9 liters would be consumed. This would be below the 10^{-6} risk range.

Response:

DOE appreciates the additional perspective on risk provided by the commentor and will consider this information in its final decision-making.

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Document #574 Comment #101 Commentor: U.S. Environmental Protection Agency

EPA understands that the current liner in Cell 4A is being removed and this cell will be reconstructed with a double liner based on commitments made by IUC to the Utah Department of Environmental Quality. What is the likelihood, now that regulatory authority has transferred from NRC to the Utah Department of Environmental Quality, that cell 4B (the proposed wet cell to handle the tailings slurried from the Moab site), and cell 5 (proposed to be the final repository for the Moab tailings) will also be required to be similarly lined? Is the DOE working with UDEQ to determine how the transfer of regulatory jurisdiction from the NRC to UDEQ might affect the design of the cell and the overall cost of a White Mesa disposal alternative?

Response:

DOE has revised text to identify the regulatory authority of the State of Utah over the White Mesa Mill. The cover designs characterized and evaluated in the EIS are conceptual designs based on DOE's 20+ years of experience at UMTRCA sites and are considered adequate for the purpose of supporting the impact assessments of the EIS. Some examples of UMTRCA sites where DOE has completed remedial actions are three sites in Colorado (Grand Junction, Rifle, and Gunnison) and one s ite in Utah (Green River). The level of detail suggested by the comment is typically not presented until after the Record of Decision in the remedial action plan, as stated in Section 2.1.1.3 of the EIS. DOE would consult further in the development of the remedial action plan if White Mesa Mill were selected in the Record of Decision.

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Document #574 Comment #102 Commentor: U.S. Environmental Protection Agency

Page H−4, H2.1 Transportation Accident Rates, Table H−2 Utah Specific Accident and Fatality Rates: DOE has utilized Utah specific accident rates taken from data provided in Saricks and Tompkins for rail and heavy combination trucks. Are the truck accident rates based on a statewide average or are they based specifically on accident rates along US 191? If a statewide accident rate for state highways was utilized, did DOE check accident rates provided or available from the Utah Department of Transportation to determine if US 191 had comparable rates? Has the DOE requested any information on locations or segments of any of the haul routes which have significantly greater accident incident rates than might be expected on such highways?

Response:

The accident rates from Saricks and Tompkins (1999) are based on Utah-specific state-wide accident rates. The estimated number of truck accidents and fatal truck accidents used in the EIS are based on the estimated number of truck miles traveled times the Utah-specific truck accident and fatality rates reported by Saricks and Tompkins. As will be shown, when this truck accident rate and fatality rate are applied to all truck traffic on US-191, the agreement with the actual number of truck accidents and fatalities on the same route segment of US-191 is excellent. The UDOT web site (www.dot.utah.gov/progdev/traffic/) provides data on the average annual daily traffic volume (AAVT) by route segment for the years up through 2002 and the truck fraction on those route segments up through 1999. The year 1999 is the last year for which a complete set of data is available. The actual number of reported truck accidents and truck-related fatalities will be based on information reported to the U.S. Department of Transportation by the State of Utah for the same segment of US-191.

Document #574 Comment #102 - response continued

To estimate the projected number of truck-related accidents and fatalities on US-191 in San Juan and Grand Counties Utah, the total truck mileage on the 157.71-mile route segment of US-191 from the Utah/Arizona state line to I-70 was estimated by multiplying the AAVT for the segment times the truck fraction for the segment, summing over all segments, and then dividing by the total length of 157.71 to get the distance-weighted AAVT for trucks. In 1999, that AAVT was 463. This AAVT was then multiplied by the total segment length and by 365 to obtain the total truck miles traveled on the 157.71-mile length of US-191 through San Juan and Grand Counties. This annual mileage was converted to kilometers and then multiplied by the truck accident rate from Saricks and Tompkins to get an estimate of 13 truck accidents in 1999. While the number of truck accidents recorded in the Motor Carrier Management Information System (MCMIS) for San Juan and Grand County in 1999 was 3, between 1993 and 1999, the number of reported truck accidents ranges from a low of 3 to a high of 13, with the average being between 7 and 8 in any given year. Thus, using the Saricks and Tompkins accident rate for US-191 provides a realistic estimate of the number of truck accidents.

Regarding the estimate of the number of fatalities associated with truck travel on US-191, using the same annual truck mileage used to estimate the number of accidents and multiplying by the Saricks and Tompkins estimate of the truck accident rate on primary roads in Utah results in less than one accident per year, about 0.7 accidents. From 1993 to 1999, five fatal truck accidents and six fatalities are reported in MCMIS for the 157.71 miles of US-191 in San Juan and Grand Counties. The actual number of fatal truck accidents is completely consistent with the Saricks and Tompkins projection.

Based on this analysis, the accident rate and the fatal accident rate used in EIS provide a reasonable prediction of the actual number of truck accidents and truck fatalities that might occur for the proposed action and all the alternatives being evaluated.
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Document #598 Comment #1 Commentor: Keeler, Bruce

As a River Outfitter who operates on the Colorado River adjacent to and below the location of the Atlas tailings I must strongly recommend that the tailings be moved away from the Colorado River flood plain. My day trip business by canoe from the boat ramp above the tailings to several destinations several miles below the pile has stopped being a viable business option since the official reports have come out. The Moab area is tourist based and keeping the tailings in place will harm our current local economy.

Response:

Concern for public and worker safety is foremost in DOE's ongoing management of the site and is paramount in its decision-making. Based on the analyses provided in the EIS (which consider both public and worker safety), consideration of the consequences of the uncertainties characterized in the EIS, and the comments received on the draft EIS, DOE has identified off-site disposal at the Crescent Junction site using rail transportation and active ground water remediation as its preferred alternatives for the remediation of the Moab mill tailings, vicinity properties, and contaminated ground water.

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Document #598 Comment #2 Commentor: Keeler, Bruce

I also serve as the Mayor of the Town of Castle Valley located approximately 16 miles from the pile. We shop for our groceries and all necessities in Moab so our concern is very personal here also. The Town Council has voted to support a resolution promoting the moving of the pile north of Moab.

Response:

DOE has considered input from community officials and the public throughout the preparation of the EIS. This input has been instrumental in the identification of off-site disposal at Crescent Junction using rail and active ground water remediation as the Department's preferred alternatives. DOE will continue to consider such input as it finalizes its decision.

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Document #598 Comment #3 Commentor: Keeler, Bruce

There are several other points that need to be considered in the choice to relocate the tailings pile. The amounts of ammonia, radium, lead and others are too high to leave in the flood plain because no one can account for disaster related to flooding from a major regional river system.

Response:

DOE considered the flood risks associated with leaving the tailings pile in place. Although the risks from contaminants do not appear to mandate relocation of the tailings pile, potential future risks will be considered in DOE's final decision-making.

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Document #598 Comment #4 Commentor: Keeler, Bruce

We have a responsibility to the future generations to leave them with clean, safe water not water contaminated by nuclear waste. The health of the Moab Community is also tied to the moving out of their "air space", not to mention the current and future down stream users. Health and safety should hold sway over cost, although we should try to keep the necessary costs as low as possible. This would lead to moving the pile north to Klondie Flat.

Response:

See response to comment #1.

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Document #598 Comment #5 Commentor: Keeler, Bruce

Moab has produced this waste to help with the cold war and is still willing to keep the waste locally, it just needs to be moved away from the Colorado River.

Response:

See response to comment #1.

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